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## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA-R04-OAR-2009-0783-201034, FRL-9507-9]

## Approval and Promulgation of Air Quality Implementation Plans; Commonwealth of Kentucky; Regional Haze State Implementation Plan

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** EPA is proposing a limited approval and a limited disapproval of two revisions to the Kentucky State Implementation Plan (SIP) submitted by the Commonwealth of Kentucky through the Kentucky Energy and Environment Cabinet, Division of Air Quality (KYDAQ), on June 25, 2008, and May 28, 2010, that address regional haze for the first implementation period. These revisions address the requirements of the Clean Air Act (CAA or Act) and EPA's rules that require states to prevent any future and remedy any existing anthropogenic impairment of visibility in mandatory Class I areas (national parks and wilderness areas) caused by emissions of air pollutants from numerous sources located over a wide geographic area (also referred to as the "regional haze program"). States are required to assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas. EPA is proposing a limited approval of these SIP revisions to implement the regional haze requirements for Kentucky on the basis that the revisions, as a whole, strengthen the Kentucky SIP. Also in this action, EPA is proposing a limited disapproval of these same SIP revisions because of the deficiencies in the Commonwealth's regional haze SIP submittal arising from the remand by the U.S. Court of

Appeals for the District of Columbia Circuit (D.C. Circuit) to EPA of the Clean Air Interstate Rule (CAIR).

**DATES:** Comments must be received on or before [insert date 30 days from the date of publication in the Federal Register].

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA-R04-OAR-2009-0783, by one of the following methods:

1. [www.regulations.gov](http://www.regulations.gov): Follow the on-line instructions for submitting comments.
2. E-mail: [benjamin.lynorae@epa.gov](mailto:benjamin.lynorae@epa.gov).
3. Fax: 404-562-9019.
4. Mail: EPA-R04-OAR-2009-0783, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW, Atlanta, Georgia 30303-8960.
5. Hand Delivery or Courier: Lynorae Benjamin, Chief, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW, Atlanta, Georgia 30303-8960. Such deliveries are only accepted during the Regional Office's normal hours of operation. The Regional Office's official hours of business are Monday through Friday, 8:30 to 4:30, excluding Federal holidays.

*Instructions:* Direct your comments to Docket ID No. "EPA-R04-OAR-2009-0783." EPA's policy is that all comments received will be included in the public docket without change and may be made available online at [www.regulations.gov](http://www.regulations.gov), including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit

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*Docket:* All documents in the electronic docket are listed in the [www.regulations.gov](http://www.regulations.gov) index. Although listed in the index, some information is not publicly available, i.e., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in [www.regulations.gov](http://www.regulations.gov) or in hard copy at the Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW, Atlanta, Georgia 30303-8960. EPA requests that if at all possible, you contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your

inspection. The Regional Office's official hours of business are Monday through Friday, 8:30 to 4:30, excluding Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Sara Waterson or Michele Notarianni, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW, Atlanta, Georgia 30303-8960. Sara Waterson can be reached at telephone number (404) 562-9061 and by electronic mail at [waterson.sara@epa.gov](mailto:waterson.sara@epa.gov). Michele Notarianni can be reached at telephone number (404) 562-9031 and by electronic mail at [notarianni.michele@epa.gov](mailto:notarianni.michele@epa.gov).

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**I. What Action is EPA Proposing to Take?**

EPA is proposing a limited approval of Kentucky's June 25, 2008, and May 28, 2010, SIP revisions addressing regional haze under CAA sections 301(a) and 110(k)(3) because the revisions as a whole strengthen the Kentucky SIP. However, the Kentucky SIP relies on CAIR, an EPA rule, to satisfy key elements of the regional haze requirements. Due to the remand of CAIR, *see North Carolina v. EPA*, 531 F.3d 836 (D.C. Cir. 2008), the revisions do not meet all of the applicable requirements of the CAA and EPA's regulations as set forth in sections 169A and 169B of the CAA and in 40 CFR 51.300-308. As a result, EPA is concurrently proposing a limited disapproval of Kentucky's SIP revisions. The revisions nevertheless represent an improvement over the current SIP, and make considerable progress in fulfilling the applicable

CAA regional haze program requirements. This proposed rulemaking and the accompanying Technical Support Document<sup>1</sup> (TSD) explain the basis for EPA's proposed limited approval and limited disapproval actions.

Under CAA sections 301(a) and 110(k)(6) and EPA's long-standing guidance, a limited approval results in approval of the entire SIP submittal, even of those parts that are deficient and prevent EPA from granting a full approval of the SIP revision. *Processing of State Implementation Plan (SIP) Revisions*, EPA Memorandum from John Calcagni, Director, Air Quality Management Division, OAQPS, to Air Division Directors, EPA Regional Offices I-X, September 7, 1992, (1992 Calcagni Memorandum) located at <http://www.epa.gov/ttn/caaa/t1/memoranda/siproc.pdf>. The deficiencies that EPA has identified as preventing a full approval of this SIP revision relate to the status and impact of CAIR on certain interrelated and required elements of the regional haze program. At the time the Kentucky regional haze SIP was being developed, the Commonwealth's reliance on CAIR was fully consistent with EPA's regulations, *see* 70 FR 39104, 39142 (July 6, 2005). CAIR, as originally promulgated, requires significant reductions in emissions of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) to limit the interstate transport of these pollutants, and the reliance on CAIR by affected states as an alternative to requiring BART for electric generating units (EGUs) had specifically been upheld in *Utility Air Regulatory Group v. EPA*, 471 F.3d 1333 (D.C. Cir. 2006). In 2008, however, the D.C. Circuit remanded CAIR back to EPA. *See North Carolina v. EPA*, 550 F.3d 1176 (D.C. Cir. 2008). The Court found CAIR to be inconsistent with the requirements of the CAA, *see North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008), but ultimately remanded the rule to EPA without vacatur because it found that "allowing CAIR to

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<sup>1</sup>EPA's TSD to this action, entitled, "*Technical Support Document for Kentucky's Regional Haze Submittal*," is included in the public docket for this action.

remain in effect until it is replaced by a rule consistent with [the court's] opinion would at least temporarily preserve the environmental values covered by CAIR.” *North Carolina v. EPA*, 550 F.3d at 1178. In response to the court's decision, EPA has issued a new rule to address interstate transport of NO<sub>x</sub> and SO<sub>2</sub> in the eastern United States (i.e., the Transport Rule, also known as the Cross-State Air Pollution Rule). *See* 76 FR 48208 (August 8, 2011). EPA explained in that action that EPA is promulgating the Transport Rule as a replacement for (not a successor to) CAIR's SO<sub>2</sub> and NO<sub>x</sub> emissions reduction and trading programs. In other words, the CAIR and CAIR Federal Implementation Plan (FIP) requirements only remain in force to address emissions through the 2011 control periods. As part of the Transport Rule, EPA finalized regulatory changes to sunset the CAIR and CAIR FIPs for control periods in 2012 and beyond. *See* 76 FR 48322.

EPA also stated in that final action that EPA has not conducted a technical analysis to determine whether compliance with the Transport Rule would satisfy the requirements of the RHR addressing alternatives to BART. For that reason, EPA did not make a determination or establish a presumption that compliance with the Transport Rule satisfies BART-related requirements for EGUs. EPA is now in the process of determining whether compliance with the Transport Rule will provide for greater reasonable progress toward improving visibility than source-specific BART controls for EGUs but no such determination has yet been proposed.

## **II. What is the Background for EPA's Proposed Action?**

### **A. The Regional Haze Problem**

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles (PM<sub>2.5</sub>) (e.g.,



sulfates, nitrates, organic carbon, elemental carbon, and soil dust), and their precursors (e.g., SO<sub>2</sub>, NO<sub>x</sub>, and in some cases, ammonia (NH<sub>3</sub>) and volatile organic compounds (VOC)). Fine particle precursors react in the atmosphere to form fine particulate matter which impairs visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. PM<sub>2.5</sub> can also cause serious health effects and mortality in humans and contributes to environmental effects such as acid deposition and eutrophication.

Data from the existing visibility monitoring network, the “Interagency Monitoring of Protected Visual Environments” (IMPROVE) monitoring network, show that visibility impairment caused by air pollution occurs virtually all the time at most national park and wilderness areas. The average visual range<sup>2</sup> in many Class I areas<sup>3</sup> (i.e., national parks and memorial parks, wilderness areas, and international parks meeting certain size criteria) in the western United States is 100-150 kilometers, or about one-half to two-thirds of the visual range that would exist without anthropogenic air pollution. In most of the eastern Class I areas of the United States, the average visual range is less than 30 kilometers, or about one-fifth of the visual range that would exist under estimated natural conditions. *See* 64 FR 35715 (July 1, 1999).

## **B. Requirements of the CAA and EPA’s Regional Haze Rule (RHR)**

In section 169A of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation’s national parks and wilderness areas. This section of the CAA

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<sup>2</sup>Visual range is the greatest distance, in kilometers or miles, at which a dark object can be viewed against the sky.

<sup>3</sup>Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6,000 acres, wilderness areas and national memorial parks exceeding 5,000 acres, and all international parks that were in existence on August 7, 1977. *See* 42 U.S.C. 7472(a). In accordance with section 169A of the CAA, EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value. *See* 44 FR 69122 (November 30, 1979). The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions. *See* 42 U.S.C. 7472(a). Although states and tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to “mandatory Class I Federal areas.” Each mandatory Class I Federal area is the responsibility of a “Federal Land Manager.” *See* 42 U.S.C. 7602(i). When the term “Class I area” is used in this action, it means a “mandatory Class I Federal area.”

establishes as a national goal the “prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution.” On December 2, 1980, EPA promulgated regulations to address visibility impairment in Class I areas that is “reasonably attributable” to a single source or small group of sources, i.e., “reasonably attributable visibility impairment.” *See* 45 FR 80084. These regulations represented the first phase in addressing visibility impairment. EPA deferred action on regional haze that emanates from a variety of sources until monitoring, modeling, and scientific knowledge about the relationships between pollutants and visibility impairment were improved.

Congress added section 169B to the CAA in 1990 to address regional haze issues. EPA promulgated a rule to address regional haze on July 1, 1999 (64 FR 35713), the RHR. The RHR revised the existing visibility regulations to integrate into the regulation provisions addressing regional haze impairment and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in EPA’s visibility protection regulations at 40 CFR 51.300-309. Some of the main elements of the regional haze requirements are summarized in section III of this preamble. The requirement to submit a regional haze SIP applies to all 50 states, the District of Columbia, and the Virgin Islands.<sup>4</sup> 40 CFR 51.308(b) requires states to submit the first implementation plan addressing regional haze visibility impairment no later than December 17, 2007.

### **C. Roles of Agencies in Addressing Regional Haze**

Successful implementation of the regional haze program will require long-term regional coordination among states, tribal governments, and various Federal agencies. As noted above,

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<sup>4</sup>Albuquerque/Bernalillo County in New Mexico must also submit a regional haze SIP to completely satisfy the requirements of section 110(a)(2)(D) of the CAA for the entire State of New Mexico under the New Mexico Air Quality Control Act (section 74-2-4).

pollution affecting the air quality in Class I areas can be transported over long distances, even hundreds of kilometers. Therefore, to effectively address the problem of visibility impairment in Class I areas, states need to develop strategies in coordination with one another, taking into account the effect of emissions from one jurisdiction on the air quality in another.

Because the pollutants that lead to regional haze can originate from sources located across broad geographic areas, EPA has encouraged the states and tribes across the United States to address visibility impairment from a regional perspective. Five regional planning organizations (RPOs) were developed to address regional haze and related issues. The RPOs first evaluated technical information to better understand how their states and tribes impact Class I areas across the country, and then pursued the development of regional strategies to reduce emissions of particulate matter (PM) and other pollutants leading to regional haze.

The Visibility Improvement State and Tribal Association of the Southeast (VISTAS) RPO is a collaborative effort of state governments, tribal governments, and various Federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility and other air quality issues in the southeastern United States. Member state and tribal governments include: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, and the Eastern Band of the Cherokee Indians.

### **III. What Are the Requirements for Regional Haze SIPs?**

#### **A. The CAA and the RHR**

Regional haze SIPs must assure reasonable progress towards the national goal of achieving natural visibility conditions in Class I areas. Section 169A of the CAA and EPA's

implementing regulations require states to establish long-term strategies for making reasonable progress toward meeting this goal. Implementation plans must also give specific attention to certain stationary sources that were in existence on August 7, 1977, but were not in operation before August 7, 1962, and require these sources, where appropriate, to install BART controls for the purpose of eliminating or reducing visibility impairment. The specific regional haze SIP requirements are discussed in further detail below.

#### **B. Determination of Baseline, Natural, and Current Visibility Conditions**

The RHR establishes the deciview as the principal metric or unit for expressing visibility. This visibility metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Visibility expressed in deciviews is determined by using air quality measurements to estimate light extinction and then transforming the value of light extinction using a logarithm function. The deciview is a more useful measure for tracking progress in improving visibility than light extinction itself because each deciview change is an equal incremental change in visibility perceived by the human eye. Most people can detect a change in visibility at one deciview.<sup>5</sup>

The deciview is used in expressing RPGs (which are interim visibility goals towards meeting the national visibility goal), defining baseline, current, and natural conditions, and tracking changes in visibility. The regional haze SIPs must contain measures that ensure “reasonable progress” toward the national goal of preventing and remedying visibility impairment in Class I areas caused by anthropogenic air pollution by reducing anthropogenic emissions that cause regional haze. The national goal is a return to natural conditions, i.e., anthropogenic sources of air pollution would no longer impair visibility in Class I areas.

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<sup>5</sup>The preamble to the RHR provides additional details about the deciview. *See* 64 FR 35714, 35725 (July 1, 1999).

To track changes in visibility over time at each of the 156 Class I areas covered by the visibility program (40 CFR 81.401-437), and as part of the process for determining reasonable progress, states must calculate the degree of existing visibility impairment at each Class I area at the time of each regional haze SIP submittal and periodically review progress every five years, i.e., midway through each 10-year implementation period. To do this, the RHR requires states to determine the degree of impairment (in deciviews) for the average of the 20 percent least impaired (“best”) and 20 percent most impaired (“worst”) visibility days over a specified time period at each of their Class I areas. In addition, states must also develop an estimate of natural visibility conditions for the purpose of comparing progress toward the national goal. Natural visibility is determined by estimating the natural concentrations of pollutants that cause visibility impairment and then calculating total light extinction based on those estimates. EPA has provided guidance to states regarding how to calculate baseline, natural, and current visibility conditions in documents titled, EPA’s *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule*, September 2003, (EPA-454/B-03-005 located at [http://www.epa.gov/ttncaaa1/t1/memoranda/rh\\_envcurhr\\_gd.pdf](http://www.epa.gov/ttncaaa1/t1/memoranda/rh_envcurhr_gd.pdf)), (hereinafter referred to as “EPA’s 2003 Natural Visibility Guidance”), and *Guidance for Tracking Progress Under the Regional Haze Rule*, September 2003, (EPA-454/B-03-004 located at [http://www.epa.gov/ttncaaa1/t1/memoranda/rh\\_tpurhr\\_gd.pdf](http://www.epa.gov/ttncaaa1/t1/memoranda/rh_tpurhr_gd.pdf)), (hereinafter referred to as “EPA’s 2003 Tracking Progress Guidance”).

For the first regional haze SIPs that were due by December 17, 2007, “baseline visibility conditions” were the starting points for assessing “current” visibility impairment. Baseline visibility conditions represent the degree of visibility impairment for the 20 percent least impaired days and 20 percent most impaired days for each calendar year from 2000 to 2004.

Using monitoring data for 2000 through 2004, states are required to calculate the average degree of visibility impairment for each Class I area, based on the average of annual values over the five-year period. The comparison of initial baseline visibility conditions to natural visibility conditions indicates the amount of improvement necessary to attain natural visibility, while the future comparison of baseline conditions to the then current conditions will indicate the amount of progress made. In general, the 2000 - 2004 baseline period is considered the time from which improvement in visibility is measured.

### **C. Determination of Reasonable Progress Goals (RPGs)**

The vehicle for ensuring continuing progress towards achieving the natural visibility goal is the submission of a series of regional haze SIPs from the states that establish two RPGs (i.e., two distinct goals, one for the “best” and one for the “worst” days) for every Class I area for each (approximately) 10-year implementation period. The RHR does not mandate specific milestones or rates of progress, but instead calls for states to establish goals that provide for “reasonable progress” toward achieving natural (i.e., “background”) visibility conditions. In setting RPGs, states must provide for an improvement in visibility for the most impaired days over the (approximately) 10-year period of the SIP, and ensure no degradation in visibility for the least impaired days over the same period.

States have significant discretion in establishing RPGs, but are required to consider the following factors established in section 169A of the CAA and in EPA’s RHR at 40 CFR 51.308(d)(1)(i)(A): (1) the costs of compliance; (2) the time necessary for compliance; (3) the energy and non-air quality environmental impacts of compliance; and (4) the remaining useful life of any potentially affected sources. States must demonstrate in their SIPs how these factors are considered when selecting the RPGs for the best and worst days for each applicable Class I

area. States have considerable flexibility in how they take these factors into consideration, as noted in EPA's *Guidance for Setting Reasonable Progress Goals under the Regional Haze Program* ("EPA's Reasonable Progress Guidance"), July 1, 2007, memorandum from William L. Wehrum, Acting Assistant Administrator for Air and Radiation, to EPA Regional Administrators, EPA Regions 1-10 (pp.4-2, 5-1). In setting the RPGs, states must also consider the rate of progress needed to reach natural visibility conditions by 2064 (referred to as the "uniform rate of progress" or the "glidepath") and the emission reduction measures needed to achieve that rate of progress over the 10-year period of the SIP. Uniform progress towards achievement of natural conditions by the year 2064 represents a rate of progress which states are to use for analytical comparison to the amount of progress they expect to achieve. In setting RPGs, each state with one or more Class I areas ("Class I state") must also consult with potentially "contributing states," i.e., other nearby states with emission sources that may be affecting visibility impairment at the Class I state's areas. *See* 40 CFR 51.308(d)(1)(iv).

#### **D. Best Available Retrofit Technology (BART)**

Section 169A of the CAA directs states to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, section 169A(b)(2)(A) of the CAA requires states to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards the natural visibility goal, including a requirement that certain categories of existing major stationary sources<sup>6</sup> built between 1962 and 1977 procure, install, and operate the "Best Available Retrofit Technology" as determined by the state. Under the RHR, states are directed to conduct BART determinations for such "BART-eligible" sources that may be anticipated to cause or contribute to any visibility impairment in a Class I area. Rather than requiring source-specific BART

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<sup>6</sup>The set of "major stationary sources" potentially subject to BART is listed in CAA section 169A(g)(7).

controls, states also have the flexibility to adopt an emissions trading program or other alternative program as long as the alternative provides greater reasonable progress towards improving visibility than BART.

On July 6, 2005, EPA published the *Guidelines for BART Determinations Under the Regional Haze Rule* at Appendix Y to 40 CFR Part 51 (hereinafter referred to as the “BART Guidelines”) to assist states in determining which of their sources should be subject to the BART requirements and in determining appropriate emission limits for each applicable source. In making a BART determination for a fossil fuel-fired electric generating plant with a total generating capacity in excess of 750 megawatts (MW), a state must use the approach set forth in the BART Guidelines. A state is encouraged, but not required, to follow the BART Guidelines in making BART determinations for other types of sources.

States must address all visibility-impairing pollutants emitted by a source in the BART determination process. The most significant visibility impairing pollutants are SO<sub>2</sub>, NO<sub>x</sub>, and PM. EPA has stated that states should use their best judgment in determining whether VOC or NH<sub>3</sub> compounds impair visibility in Class I areas.

Under the BART Guidelines, states may select an exemption threshold value for their BART modeling, below which a BART-eligible source would not be expected to cause or contribute to visibility impairment in any Class I area. The state must document this exemption threshold value in the SIP and must state the basis for its selection of that value. Any source with emissions that model above the threshold value would be subject to a BART determination review. The BART Guidelines acknowledge varying circumstances affecting different Class I areas. States should consider the number of emission sources affecting the Class I areas at issue



and the magnitude of the individual sources' impacts. Any exemption threshold set by the state should not be higher than 0.5 deciview.

In their SIPs, states must identify potential BART sources, described as "BART-eligible sources" in the RHR, and document their BART control determination analyses. In making BART determinations, section 169A(g)(2) of the CAA requires that states consider the following factors: (1) the costs of compliance, (2) the energy and non-air quality environmental impacts of compliance, (3) any existing pollution control technology in use at the source, (4) the remaining useful life of the source, and (5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. States are free to determine the weight and significance to be assigned to each factor.

A regional haze SIP must include source-specific BART emission limits and compliance schedules for each source subject to BART. Once a state has made its BART determination, the BART controls must be installed and in operation as expeditiously as practicable, but no later than five years after the date of EPA approval of the regional haze SIP. *See* CAA section 169(g)(4); *see* 40 CFR 51.308(e)(1)(iv). In addition to what is required by the RHR, general SIP requirements mandate that the SIP must also include all regulatory requirements related to monitoring, recordkeeping, and reporting for the BART controls on the source.

As noted above, the RHR allows states to implement an alternative program in lieu of BART so long as the alternative program can be demonstrated to achieve greater reasonable progress toward the national visibility goal than would BART. Under regulations issued in 2005 revising the regional haze program, EPA made just such a demonstration for CAIR. *See* 70 FR 39104 (July 6, 2005). EPA's regulations provide that states participating in the CAIR cap-and-trade program under 40 CFR part 96 pursuant to an EPA-approved CAIR SIP or which remain

subject to the CAIR FIP in 40 CFR part 97 need not require affected BART-eligible EGUs to install, operate, and maintain BART for emissions of SO<sub>2</sub> and NO<sub>x</sub>. *See* 40 CFR 51.308(e)(4). Because CAIR did not address direct emissions of PM, states were still required to conduct a BART analysis for PM emissions from EGUs subject to BART for that pollutant.

#### **E. Long-Term Strategy (LTS)**

Consistent with the requirement in section 169A(b) of the CAA that states include in their regional haze SIP a 10 to 15 year strategy for making reasonable progress, section 51.308(d)(3) of the RHR requires that states include a LTS in their regional haze SIPs. The LTS is the compilation of all control measures a state will use during the implementation period of the specific SIP submittal to meet applicable RPGs. The LTS must include “enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals” for all Class I areas within, or affected by emissions from, the state. *See* 40 CFR 51.308(d)(3).

When a state’s emissions are reasonably anticipated to cause or contribute to visibility impairment in a Class I area located in another state, the RHR requires the impacted state to coordinate with the contributing states in order to develop coordinated emissions management strategies. *See* 40 CFR 51.308(d)(3)(i). In such cases, the contributing state must demonstrate that it has included, in its SIP, all measures necessary to obtain its share of the emissions reductions needed to meet the RPGs for the Class I area. The RPOs have provided forums for significant interstate consultation, but additional consultations between states may be required to sufficiently address interstate visibility issues. This is especially true where two states belong to different RPOs.

States should consider all types of anthropogenic sources of visibility impairment in developing their LTS, including stationary, minor, mobile, and area sources. At a minimum, states must describe how each of the following seven factors listed below are taken into account in developing their LTS: (1) emissions reductions due to ongoing air pollution control programs, including measures to address RAVI; (2) measures to mitigate the impacts of construction activities; (3) emissions limitations and schedules for compliance to achieve the RPG; (4) source retirement and replacement schedules; (5) smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the state for these purposes; (6) enforceability of emissions limitations and control measures; and (7) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the LTS. *See* 40 CFR 51.308(d)(3)(v).

**F. Coordinating Regional Haze and Reasonably Attributable Visibility Impairment (RAVI) LTS**

As part of the RHR, EPA revised 40 CFR 51.306(c) regarding the LTS for RAVI to require that the RAVI plan must provide for a periodic review and SIP revision not less frequently than every three years until the date of submission of the state's first plan addressing regional haze visibility impairment, which was due December 17, 2007, in accordance with 40 CFR 51.308(b) and (c). On or before this date, the state must revise its plan to provide for review and revision of a coordinated LTS for addressing RAVI and regional haze, and the state must submit the first such coordinated LTS with its first regional haze SIP. Future coordinated LTS's, and periodic progress reports evaluating progress towards RPGs, must be submitted consistent with the schedule for SIP submission and periodic progress reports set forth in 40 CFR

51.308(f) and 51.308(g), respectively. The periodic review of a state's LTS must report on both regional haze and RAVI impairment and must be submitted to EPA as a SIP revision.

#### **G. Monitoring Strategy and Other Implementation Plan Requirements**

Section 51.308(d)(4) of the RHR includes the requirement for a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I Federal areas within the state. The strategy must be coordinated with the monitoring strategy required in section 51.305 for RAVI. Compliance with this requirement may be met through "participation" in the IMPROVE network, i.e., review and use of monitoring data from the network. The monitoring strategy is due with the first regional haze SIP, and it must be reviewed every five years. The monitoring strategy must also provide for additional monitoring sites if the IMPROVE network is not sufficient to determine whether RPGs will be met.

The SIP must also provide for the following:

- Procedures for using monitoring data and other information in a state with mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas both within and outside the state;
- Procedures for using monitoring data and other information in a state with no mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas in other states;
- Reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the state, and where possible, in electronic format;
- Developing a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area. The

inventory must include emissions for a baseline year, emissions for the most recent year for which data are available, and estimates of future projected emissions. A state must also make a commitment to update the inventory periodically; and

- Other elements, including reporting, recordkeeping, and other measures necessary to assess and report on visibility.

The RHR requires control strategies to cover an initial implementation period extending to the year 2018, with a comprehensive reassessment and revision of those strategies, as appropriate, every 10 years thereafter. Periodic SIP revisions must meet the core requirements of section 51.308(d) with the exception of BART. The requirement to evaluate sources for BART applies only to the first regional haze SIP. Facilities subject to BART must continue to comply with the BART provisions of section 51.308(e), as noted above. Periodic SIP revisions will assure that the statutory requirement of reasonable progress will continue to be met.

#### **H. Consultation with States and Federal Land Managers (FLMs)**

The RHR requires that states consult with FLMs before adopting and submitting their SIPs. *See* 40 CFR 51.308(i). States must provide FLMs an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on the SIP. This consultation must include the opportunity for the FLMs to discuss their assessment of impairment of visibility in any Class I area and to offer recommendations on the development of the RPGs and on the development and implementation of strategies to address visibility impairment. Further, a state must include in its SIP a description of how it addressed any comments provided by the FLMs. Finally, a SIP must provide procedures for continuing consultation between the state and FLMs regarding the state's visibility protection program, including development and review of

SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas.

#### **IV. What is the Relationship of CAIR and the Transport Rule to the Regional Haze Requirements?**

##### **A. Overview of EPA's CAIR**

CAIR, as originally promulgated, required 28 states and the District of Columbia to reduce emissions of SO<sub>2</sub> and NO<sub>x</sub> that significantly contributed to, or interfered with maintenance of, the 1997 national ambient air quality standards (NAAQS) for fine particulates and/or the 1997 NAAQS for 8-hour ozone in any downwind state. *See* 70 FR 25162 (May 12, 2005). CAIR established emissions budgets for SO<sub>2</sub> and NO<sub>x</sub> for states found to contribute significantly to nonattainment in downwind states and required these states to submit SIP revisions that implemented these budgets. States had the flexibility to choose which control measures to adopt to achieve the budgets, including participation in EPA-administered cap-and-trade programs addressing SO<sub>2</sub>, NO<sub>x</sub> -annual, and NO<sub>x</sub> -ozone season emissions. In 2006, EPA promulgated FIPs for all states covered by CAIR to ensure the reductions were achieved in a timely manner.

##### **B. Remand of CAIR**

On July 11, 2008, the D.C. Circuit issued its decision to vacate and remand both CAIR and the associated CAIR FIPs in their entirety. *See North Carolina v. EPA*, 531 F.3d 836 (D.C. Cir. 2008). However, in response to EPA's petition for rehearing, the Court issued an order remanding CAIR to EPA without vacating either CAIR or the CAIR FIPs. The Court thereby left the EPA CAIR rule and CAIR SIPs and FIPs in place in order to "temporarily preserve the

environmental values covered by CAIR” until EPA replaces it with a rule consistent with the court’s opinion. *See North Carolina v. EPA*, 550 F.3d at 1178. The Court directed EPA to “remedy CAIR’s flaws” consistent with its July 11, 2008, opinion but declined to impose a schedule on EPA for completing that action. EPA subsequently promulgated the Transport Rule to replace CAIR. 76 FR 48208 (August 8, 2011).

**C. Regional Haze SIP Elements Potentially Affected by the CAIR Remand and Promulgation of the Transport Rule**

The following is a summary of the elements of the regional haze SIPs that are potentially affected by the remand of CAIR. As described above, EPA determined in 2005 that states opting to participate in the CAIR cap-and-trade program need not require BART for SO<sub>2</sub> and NO<sub>x</sub> at BART-eligible EGUs. 70 FR at 39142-39143. Many states relied on CAIR as an alternative to BART for SO<sub>2</sub> and NO<sub>x</sub> for subject EGUs, as allowed under the BART provisions at 40 CFR 51.308(e)(4). Additionally, several states established RPGs that reflect the improvement in visibility expected to result from controls planned for or already installed on sources within the state to meet the CAIR provisions for this implementation period for specified pollutants. Many states relied upon their own CAIR SIPs or the CAIR FIPs for their states to provide the legal requirements which lead to these planned controls, and did not include enforceable measures in the LTS in the regional haze SIP submission to ensure these reductions. States also submitted demonstrations showing that no additional controls on EGUs beyond CAIR would be reasonable for this implementation period. Because of the deficiencies identified in CAIR by the court and the impact of the Transport Rule on CAIR, it is inappropriate to fully approve states’ LTSs that rely upon the emissions reductions predicted to result from CAIR to meet the BART requirement for EGUs or to meet the RPGs in the states’ regional haze SIPs. For this reason, EPA cannot

fully approve regional haze SIP revisions that rely on CAIR for emission reduction measures. However, as discussed in section IV.D, EPA still believes it is appropriate to propose a limited approval of Kentucky's regional haze SIP revisions as these revisions provide an improvement over the current SIP, and make progress in fulfilling the applicable CAA regional haze program requirements. EPA therefore proposes to grant limited approval and limited disapproval of the two Kentucky regional haze SIP revisions. The next section discusses how the Agency proposes to address these deficiencies.

In the Transport Rule, EPA did not substantively address the question of whether the emissions reductions from the Transport Rule will provide for greater reasonable progress than BART. EPA explained in that rulemaking that the Agency had not yet conducted any technical analysis to determine whether compliance with the Transport Rule would satisfy the requirements for a BART alternative program. Given the lack of any analysis at that time, EPA made no determinations as to whether the Transport Rule would provide sufficient emissions reductions and concomitant improvements in visibility to be considered to provide for greater reasonable progress than BART. Although EPA is now in the process of undertaking such an analysis, no action has been proposed. As a result, today's proposal action on Kentucky's regional haze SIP is affected by the issuance of the Transport Rule only insofar as the Transport Rule provides for the sunset of CAIR. Future analyses involving the Transport Rule and BART will determine appropriate subsequent Agency action on Kentucky's regional haze SIP revisions.

#### **D. Rationale and Scope of Proposed Limited Approval**

EPA is intending to propose to issue limited approvals of those regional haze SIP revisions that rely on CAIR to address the impact of emissions from a state's own EGUs.



Limited approval results in approval of the entire regional haze submission and all its elements. EPA is taking this approach because an affected state's SIP will be stronger and more protective of the environment with the implementation of those measures by the state and having Federal approval and enforceability than it would without those measures being included in the state's SIP.

EPA also intends to propose to issue limited disapprovals for regional haze SIP revisions that rely on CAIR. As explained in the 1992 Calcagni Memorandum, "[t]hrough a limited approval, EPA [will] concurrently, or within a reasonable period of time thereafter, disapprove the rule...for not meeting all of the applicable requirements of the Act. ... [T]he limited disapproval is a rulemaking action, and it is subject to notice and comment." Final limited disapproval of a SIP submittal does not affect the Federal enforceability of the measures in the subject SIP revision nor prevent state implementation of these measures. The legal effects of the final limited disapproval are to provide EPA the authority to issue a FIP at any time, and to obligate the Agency to take such action no more than two years after the effective date of the final limited disapproval action.

## **V. What is EPA's Analysis of Kentucky's Regional Haze Submittal?**

On June 25, 2008, and May 28, 2010, KYDAQ submitted revisions to the Kentucky SIP to address regional haze in the Commonwealth's Class I area as required by EPA's RHR. Throughout this document, references to Kentucky's (or KYDAQ's or the Commonwealth's) "regional haze SIP" refer to Kentucky's original June 25, 2008, regional haze SIP submittal, as later amended in a SIP revision submitted May 28, 2010.

### **A. Affected Class I Area**

Kentucky has one Class I area within its borders: Mammoth Cave National Park. Kentucky is responsible for developing a regional haze SIP that addresses this Class I area and for consulting with other states that impact the area.

The June 25, 2008, Kentucky regional haze SIP, as later amended on May 28, 2010, establishes RPGs for visibility improvement at Mammoth Cave National Park and a LTS to achieve those RPGs within the first regional haze implementation period ending in 2018. In developing the LTS for the area, Kentucky considered both emission sources inside and outside of Kentucky that may cause or contribute to visibility impairment in Kentucky's Class I area. The Commonwealth also identified and considered emission sources within Kentucky that may cause or contribute to visibility impairment in Class I areas in neighboring states as required by 40 CFR 51.308(d)(3). The VISTAS RPO worked with the Commonwealth in developing the technical analyses used to make these determinations, including state-by-state contributions to visibility impairment in specific Class I areas, which included the Class I area in Kentucky and those areas affected by emissions from Kentucky.

## **B. Determination of Baseline, Natural, and Current Visibility Conditions**

As required by the RHR and in accordance with EPA's 2003 Natural Visibility Guidance, Kentucky calculated baseline/current and natural visibility conditions for its Class I area, as summarized below (and as further described in sections III.B.1 and III.B.2 of EPA's TSD to this Federal Register action).

### **1. Estimating Natural Visibility Conditions**

Natural background visibility, as defined in EPA's 2003 Natural Visibility Guidance, is estimated by calculating the expected light extinction using default estimates of natural concentrations of fine particle components adjusted by site-specific estimates of humidity. This

calculation uses the IMPROVE equation, which is a formula for estimating light extinction from the estimated natural concentrations of fine particle components (or from components measured by the IMPROVE monitors). As documented in EPA's 2003 Natural Visibility Guidance, EPA allows states to use "refined" or alternative approaches to 2003 EPA guidance to estimate the values that characterize the natural visibility conditions of the Class I areas. One alternative approach is to develop and justify the use of alternative estimates of natural concentrations of fine particle components. Another alternative is to use the "new IMPROVE equation" that was adopted for use by the IMPROVE Steering Committee in December 2005.<sup>7</sup> The purpose of this refinement to the "old IMPROVE equation" is to provide more accurate estimates of the various factors that affect the calculation of light extinction. Kentucky opted to use this refined approach, referred to as the "new IMPROVE equation," for its Class I area.

Natural visibility conditions using the new IMPROVE equation were calculated separately for each Class I area by VISTAS. Natural background visibility, as defined in EPA's 2003 Natural Visibility Guidance, is estimated by calculating the expected light extinction using default estimates of natural concentrations of fine particle components adjusted by site-specific estimates of humidity.

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<sup>7</sup>The IMPROVE program is a cooperative measurement effort governed by a steering committee composed of representatives from Federal agencies (including representatives from EPA and the FLMS) and RPOs. The IMPROVE monitoring program was established in 1985 to aid the creation of Federal and State implementation plans for the protection of visibility in Class I areas. One of the objectives of IMPROVE is to identify chemical species and emission sources responsible for existing anthropogenic visibility impairment. The IMPROVE program has also been a key participant in visibility-related research, including the advancement of monitoring instrumentation, analysis techniques, visibility modeling, policy formulation and source attribution field studies.

The new IMPROVE equation takes into account the most recent review of the science<sup>8</sup> and it accounts for the effect of particle size distribution on light extinction efficiency of sulfate, nitrate, and organic carbon. It also adjusts the mass multiplier for organic carbon (particulate organic matter) by increasing it from 1.4 to 1.8. New terms are added to the equation to account for light extinction by sea salt and light absorption by gaseous nitrogen dioxide. Site-specific values are used for Rayleigh scattering (scattering of light due to atmospheric gases) to account for the site-specific effects of elevation and temperature. Separate relative humidity enhancement factors are used for small and large size distributions of ammonium sulfate and ammonium nitrate and for sea salt. The terms for the remaining contributors, elemental carbon (light-absorbing carbon), fine soil, and coarse mass terms, do not change between the original and new IMPROVE equations.

## **2. Estimating Baseline Conditions**

KYDAQ estimated baseline visibility conditions at the Kentucky Class I area using available monitoring data from an IMPROVE monitoring site in Mammoth Cave National Park. As explained in section III.B, baseline visibility conditions are the same as current conditions for the first regional haze SIP. A five-year average of the 2000 to 2004 monitoring data was calculated for each of the 20 percent worst and 20 percent best visibility days at the Kentucky Class I area. IMPROVE data records for Mammoth Cave National Park for the period 2000 to 2004 meet the EPA requirements for data completeness. See page 2-8 of EPA's 2003 Tracking

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<sup>8</sup>The science behind the revised IMPROVE equation is summarized in Appendix B.2 of the Kentucky regional haze submittal and in numerous published papers. See for example: Hand, J.L., and Malm, W.C., 2006, *Review of the IMPROVE Equation for Estimating Ambient Light Extinction Coefficients - Final Report*. March 2006. Prepared for Interagency Monitoring of Protected Visual Environments (IMPROVE), Colorado State University, Cooperative Institute for Research in the Atmosphere, Fort Collins, Colorado.  
[http://vista.cira.colostate.edu/improve/publications/GrayLit/016\\_IMPROVEeqReview/IMPROVEeqReview.htm](http://vista.cira.colostate.edu/improve/publications/GrayLit/016_IMPROVEeqReview/IMPROVEeqReview.htm); and Pitchford, Marc., 2006, *Natural Haze Levels II: Application of the New IMPROVE Algorithm to Natural Species Concentrations Estimates*. Final Report of the Natural Haze Levels II Committee to the RPO Monitoring/Data Analysis Workgroup. September 2006  
[http://vista.cira.colostate.edu/improve/Publications/GrayLit/029\\_NaturalCondII/naturalhazelevelsIIreport.ppt](http://vista.cira.colostate.edu/improve/Publications/GrayLit/029_NaturalCondII/naturalhazelevelsIIreport.ppt).

Progress Guidance. Table 3.3-1 from Appendix G of the Kentucky regional haze SIP, also provided in section III.B.3 of EPA’s TSD to this action, lists the 20 percent best and worst days for the baseline period of 2000-2004 for Mammoth Cave National Park. This data is also provided at the following website: [http://www.metro4-sesarm.org/vistas/SesarmBext\\_20BW.htm](http://www.metro4-sesarm.org/vistas/SesarmBext_20BW.htm).

### 3. Summary of Baseline and Natural Conditions

For the Kentucky Class I area, baseline visibility on the 20 percent worst days is approximately 31 deciviews. Natural visibility in the area is predicted to be approximately 11 deciviews on the 20 percent worst days. The natural and baseline conditions for Kentucky’s Class I area for both the 20 percent worst and best days are presented in Table 1 below.

**Table 1: Natural Background and Baseline Conditions for the Kentucky Class I Area**

<b>Class I area</b>	<b>Average for 20 percent Worst Days (dv<sup>9</sup>)</b>	<b>Average for 20 percent Best Days (dv)</b>
<b>Natural Background Conditions</b>		
Mammoth Cave National Park	11.1	5.0
<b>Baseline Visibility Conditions (2000 -2004)</b>		
Mammoth Cave National Park	31.4	16.5

### 4. Uniform Rate of Progress

In setting the RPGs, Kentucky considered the uniform rate of progress needed to reach natural visibility conditions by 2064 (“glidepath”) and the emission reduction measures needed to achieve that rate of progress over the period of the SIP to meet the requirements of 40 CFR 51.308(d)(1)(i)(B). As explained in EPA’s Reasonable Progress Guidance document, the

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<sup>9</sup>The term, “dv,” is the abbreviation for “deciview.”

uniform rate of progress is not a presumptive target, and RPGs may be greater, lesser, or equivalent to the glidepath.

The Commonwealth's implementation plan presents two sets of graphs, one for the 20 percent best days, and one for the 20 percent worst days, for its Class I area. Kentucky constructed the graph for the worst days (i.e., the glidepath) in accordance with EPA's 2003 Tracking Progress Guidance by plotting a straight graphical line from the baseline level of visibility impairment for 2000-2004 to the level of visibility conditions representing no anthropogenic impairment in 2064 for its area. For the best days, the graph includes a horizontal, straight line spanning from baseline conditions in 2004 out to 2018 to depict no degradation in visibility over the implementation period of the SIP. Kentucky's SIP shows that the Commonwealth's RPGs for its area provide for improvement in visibility for the 20 percent worst days over the period of the implementation plan and ensure no degradation in visibility for the 20 percent best days over the same period, in accordance with 40 CFR 51.308(d)(1).

For the Kentucky Class I area, the overall visibility improvement necessary to reach natural conditions is the difference between baseline visibility of 31.37 deciviews for the 20 percent worst days and natural conditions of 11.08 deciviews, i.e., 20.29 deciviews. Over the 60-year period from 2004 to 2064, this would require an average improvement of 0.338 deciviews per year to reach natural conditions. Hence, for the 14-year period from 2004 to 2018, in order to achieve visibility improvements at least equivalent to the uniform rate of progress for the 20 percent worst days at Mammoth Cave National Park, Kentucky would need to project at least 4.73 deciviews over the first implementation period (i.e.,  $0.338 \text{ deciviews} \times 14 \text{ years} = 4.732 \text{ deciviews}$ ) of visibility improvement from the 31.37 deciviews baseline in 2004, resulting in visibility levels at or below 26.64 deciviews in 2018. As discussed below in section V.C.7,

Kentucky projects a 5.81 deciview improvement to visibility from the 31.37 deciview baseline to 25.56 deciviews in 2018 for the 20 percent most impaired days, and a 0.94 deciview improvement to 15.57 deciviews from the baseline visibility of 16.51 deciviews for the 20 percent least impaired days.

### **C. Long-Term Strategy/Strategies**

As described in section III.E of this action, the LTS is a compilation of state-specific control measures relied on by the state for achieving its RPGs. Kentucky's LTS for the first implementation period addresses the emissions reductions from Federal, state, and local controls that take effect in the Commonwealth from the end of the baseline period starting in 2004 until 2018. The Kentucky LTS was developed by the Commonwealth, in coordination with the VISTAS RPO, through an evaluation of the following components: (1) identification of the emissions units within Kentucky and in surrounding states that likely have the largest impacts currently on visibility at the Commonwealth's Class I area; (2) estimation of emissions reductions for 2018 based on all controls required or expected under Federal and state regulations for the 2004-2018 period (including BART); (3) comparison of projected visibility improvement with the uniform rate of progress for the Commonwealth's Class I area; and (4) application of the four statutory factors in the reasonable progress analysis for the identified emissions units to determine if additional reasonable controls were required.

CAIR is also an element of Kentucky's LTS. CAIR rule revisions were approved into the Kentucky SIP in 2007. *See* 72 FR 56623. Kentucky opted to rely on CAIR emission reduction requirements to satisfy the BART requirements for SO<sub>2</sub> and NO<sub>x</sub> from EGUs. *See* 40 CFR 51.308(e)(4). Therefore, Kentucky only required its BART-eligible EGUs to evaluate PM emissions for determining whether they are subject to BART, and, if applicable, for performing a

BART control assessment. See section III.D of this action for further details. Additionally, as discussed below in section V.C.5, Kentucky concluded that no additional controls beyond CAIR are reasonable for reasonable progress for its EGUs for this first implementation period. Prior to the remand of CAIR, EPA believed the Commonwealth's reliance on CAIR for specific BART and reasonable progress provisions affecting its EGUs was adequate, as detailed later in this action. As explained in section IV of this action, the Agency proposes today to issue a limited approval and a proposed limited disapproval of the Commonwealth's regional haze SIP revisions.

#### **1. Emissions Inventory for 2018 with Federal and State Control Requirements**

The emissions inventory used in the regional haze technical analyses was developed by VISTAS with assistance from Kentucky. The 2018 emissions inventory was developed by projecting 2002 emissions and applying reductions expected from Federal and state regulations affecting the emissions of VOC and the visibility-impairing pollutants NO<sub>x</sub>, PM, and SO<sub>2</sub>. The BART Guidelines direct states to exercise judgment in deciding whether VOC and NH<sub>3</sub> impair visibility in their Class I area(s). As discussed further in section V.C.3, VISTAS performed modeling sensitivity analyses, which demonstrated that anthropogenic emissions of VOC and NH<sub>3</sub> do not significantly impair visibility in the VISTAS region. Thus, while emissions inventories were also developed for NH<sub>3</sub> and VOC, and applicable Federal VOC reductions were incorporated into Kentucky's regional haze analyses, Kentucky did not further evaluate NH<sub>3</sub> and VOC emissions sources for potential controls under BART or reasonable progress.

VISTAS developed emissions for five inventory source classifications: stationary point and area sources, off-road and on-road mobile sources, and biogenic sources. Stationary point sources are those sources that emit greater than a specified tonnage per year, depending on the



pollutant, with data provided at the facility level. Stationary area sources are those sources whose individual emissions are relatively small, but due to the large number of these sources, the collective emissions from the source category could be significant. VISTAS estimated emissions on a countywide level for the inventory categories of: a) stationary area sources; b) off-road (or non-road) mobile sources (i.e., equipment that can move but does not use the roadways); and c) biogenic sources (which are natural sources of emissions, such as trees). On-road mobile source emissions are estimated by vehicle type and road type, and are summed to the countywide level.

There are many Federal and state control programs being implemented that VISTAS and Kentucky anticipate will reduce emissions between the end of the baseline period and 2018. Emissions reductions from these control programs are projected to achieve substantial visibility improvement by 2018 in the Kentucky Class I area. The control programs relied upon by Kentucky include CAIR; EPA's NO<sub>x</sub> SIP Call; North Carolina's Clean Smokestacks Act; Georgia multi-pollutant rule; consent decrees for Tampa Electric, Virginia Electric and Power Company, Gulf Power-Plant Crist, East Kentucky Power Cooperative (EKPC) – Cooper and Spurlock stations, and American Electric Power (AEP); NO<sub>x</sub> and/or VOC reductions from the control rules in 1-hour ozone SIPs for Atlanta, Birmingham, and Northern Kentucky; North Carolina's NO<sub>x</sub> Reasonably Available Control Technology; state rule for Philip Morris USA and Norandal USA in the Charlotte/Gastonia/Rock Hill 1997 8-hour ozone nonattainment area; Federal 2007 heavy duty diesel engine standards for on-road trucks and buses; Federal Tier 2 tailpipe controls for on-road vehicles; Federal large spark ignition and recreational vehicle controls; and EPA's non-road diesel rules. Controls from various Federal Maximum Achievable Control Technology (MACT) rules were also utilized in the development of the 2018 emission inventory projections. These MACT rules include the industrial boiler/process heater MACT

(referred to as “Industrial Boiler MACT”), the combustion turbine and reciprocating internal combustion engines MACTs, and the VOC 2-, 4-, 7-, and 10-year MACT standards.

On June 8, 2007, and effective July 30, 2007, the D.C. Circuit mandated the vacatur and remand of the Industrial Boiler MACT Rule.<sup>10</sup> This MACT was vacated since it was directly affected by the vacatur and remand of the Commercial and Industrial Solid Waste Incinerator Definition Rule. Notwithstanding the vacatur of the Industrial Boiler MACT Rule, the VISTAS states, including Kentucky, decided to leave these controls in the modeling for their regional haze SIPs since it is believed that by 2018, EPA will have re-promulgated an industrial boiler MACT rule or the states will have addressed the issue through state-level case-by-case MACT reviews in accordance with section 112(j) of the CAA. EPA finds this approach acceptable for the following reasons. EPA proposed a new Industrial Boiler MACT rule to address the vacatur on June 4, 2010 (75 FR 32006), and issued a final rule on March 21, 2011 (76 FR 15608), giving Kentucky time to assure the required controls are in place prior to the end of the first implementation period in 2018. In the absence of an established MACT rule for boilers and process heaters, the statutory language in section 112(j) of the CAA specifies a schedule for the incorporation of enforceable MACT-equivalent limits into the title V operating permits of affected sources. Should circumstances warrant the need to implement section 112(j) of the CAA for industrial boilers, EPA would expect, in this case, that compliance with case-by-case MACT limits for industrial boilers would occur no later than January 2015, which is well before the 2018 RPGs for regional haze. In addition, the RHR requires that any resulting differences between emissions projections and actual emissions reductions that may occur will be addressed during the five-year review prior to the next 2018 regional haze SIP. The expected reductions due to the original, vacated Industrial Boiler MACT rule were relatively small compared to the

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<sup>10</sup> See *NRDC v. EPA*, 489 F.3d 1250 (D.C. Cir. 2007).

Commonwealth's total SO<sub>2</sub>, PM<sub>2.5</sub>, and coarse particulate matter (PM<sub>10</sub>) emissions in 2018 (i.e., 0.1 to 0.2 percent, depending on the pollutant, of the projected 2018 SO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> inventory), and not likely to affect any of Kentucky's modeling conclusions. Thus, if there is a need to address discrepancies such that projected emissions reductions from the vacated Industrial Boiler MACT were greater than actual reductions achieved by the replacement MACT, EPA would not expect that this would affect the adequacy of the existing Kentucky regional haze SIP.

Below in Tables 2 and 3 are summaries of the 2002 baseline and 2018 estimated emission inventories for Kentucky.

**Table 2: 2002 Emissions Inventory Summary for Kentucky (tons per year)**

	VOC	NO <sub>x</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	NH <sub>3</sub>	SO <sub>2</sub>
<b>Point</b>	46,315	240,362	14,219	21,421	995	529,182
<b>Area</b>	98,713	40,966	51,763	240,226	51,246	41,941
<b>On-Road Mobile</b>	103,503	156,417	2,697	3,723	5,055	6,308
<b>Off-Road Mobile</b>	44,805	104,571	6,046	6,425	31	14,043
<b>Total</b>	<b>293,336</b>	<b>542,316</b>	<b>74,725</b>	<b>271,795</b>	<b>57,327</b>	<b>591,474</b>

**Table 3: 2018 Emissions Inventory Summary for Kentucky (tons per year)**

	VOC	NO <sub>x</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	NH <sub>3</sub>	SO <sub>2</sub>
<b>Point</b>	57,287	105,411	18,172	26,848	1,377	266,745
<b>Area</b>	106,827	45,806	53,955	262,719	55,321	44,322
<b>On-Road Mobile</b>	47,066	52,263	1,272	2,580	7,811	763
<b>Off-road Mobile</b>	30,920	79,392	4,256	4,556	40	8,592

<b>Total</b>	<b>242,100</b>	<b>282,872</b>	<b>77,655</b>	<b>296,703</b>	<b>64,549</b>	<b>320,422</b>
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## 2. **Modeling to Support the LTS and Determine Visibility Improvement for Uniform Rate of Progress**

VISTAS performed modeling for the regional haze LTS for the 10 southeastern states, including Kentucky. The modeling analysis is a complex technical evaluation that began with selection of the modeling system. VISTAS used the following modeling system:

- **Meteorological Model:** The Pennsylvania State University/National Center for Atmospheric Research Mesoscale Meteorological Model is a nonhydrostatic, prognostic, meteorological model routinely used for urban- and regional- scale photochemical, PM<sub>2.5</sub>, and regional haze regulatory modeling studies.
- **Emissions Model:** The Sparse Matrix Operator Kernel Emissions modeling system is an emissions modeling system that generates hourly gridded speciated emission inputs of mobile, non-road mobile, area, point, fire, and biogenic emission sources for photochemical grid models.
- **Air Quality Model:** The EPA's Models-3/Community Multiscale Air Quality (CMAQ) modeling system is a photochemical grid model capable of addressing ozone, PM, visibility, and acid deposition at a regional scale. The photochemical model selected for this study was CMAQ version 4.5. It was modified through VISTAS with a module for Secondary Organics Aerosols in an open and transparent manner that was also subjected to outside peer review.

CMAQ modeling of regional haze in the VISTAS region for 2002 and 2018 was carried out on a grid of 12x12 kilometer cells that covers the 10 VISTAS states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West

Virginia) and states adjacent to them. This grid is nested within a larger national CMAQ modeling grid of 36x36 kilometer grid cells that covers the continental United States, portions of Canada and Mexico, and portions of the Atlantic and Pacific Oceans along the east and west coasts. Selection of a representative period of meteorology is crucial for evaluating baseline air quality conditions and projecting future changes in air quality due to changes in emissions of visibility-impairing pollutants. VISTAS conducted an in-depth analysis which resulted in the selection of the entire year of 2002 (January 1-December 31) as the best period of meteorology available for conducting the CMAQ modeling. The VISTAS states modeling was developed consistent with EPA's *Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM<sub>2.5</sub>, and Regional Haze*, located at <http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf>, (EPA-454/B-07-002), April 2007, and EPA document, *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations*, located at <http://www.epa.gov/ttnchie1/eidocs/eiguid/index.html>, EPA-454/R-05-001, August 2005, updated November 2005 ("EPA's Modeling Guidance").

VISTAS examined the model performance of the regional modeling for the areas of interest before determining whether the CMAQ model results were suitable for use in the regional haze assessment of the LTS and for use in the modeling assessment. The modeling assessment predicts future levels of emissions and visibility impairment used to support the LTS and to compare predicted, modeled visibility levels with those on the uniform rate of progress. In keeping with the objective of the CMAQ modeling platform, the air quality model performance was evaluated using graphical and statistical assessments based on measured ozone, fine particles, and acid deposition from various monitoring networks and databases for the 2002

base year. VISTAS used a diverse set of statistical parameters from the EPA's Modeling Guidance to stress and examine the model and modeling inputs. Once VISTAS determined the model performance to be acceptable, VISTAS used the model to assess the 2018 RPGs using the current and future year air quality modeling predictions, and compared the RPGs to the uniform rate of progress.

In accordance with 40 CFR 51.308(d)(3), the Commonwealth of Kentucky provided the appropriate supporting documentation for all required analyses used to determine the Commonwealth's LTS. The technical analyses and modeling used to develop the glidepath and to support the LTS are consistent with EPA's RHR, and interim and final EPA Modeling Guidance. EPA accepts the VISTAS technical modeling to support the LTS and determine visibility improvement for the uniform rate of progress because the modeling system was chosen and simulated according to EPA Modeling Guidance. EPA agrees with the VISTAS model performance procedures and results, and that the CMAQ is an appropriate tool for the regional haze assessments for the Kentucky LTS and regional haze SIP.

### **3. Relative Contributions to Visibility Impairment: Pollutants, Source Categories, and Geographic Areas**

An important step toward identifying reasonable progress measures is to identify the key pollutants contributing to visibility impairment at each Class I area. To understand the relative benefit of further reducing emissions from different pollutants, source sectors, and geographic areas, VISTAS developed emission sensitivity model runs using CMAQ to evaluate visibility and air quality impacts from various groups of emissions and pollutant scenarios in the Class I areas on the 20 percent worst visibility days.

Regarding which pollutants are most significantly impacting visibility in the VISTAS region, VISTAS' contribution assessment, based on IMPROVE monitoring data, demonstrated

that ammonium sulfate is the major contributor to PM<sub>2.5</sub> mass and visibility impairment at Class I areas in the VISTAS and neighboring states. On the 20 percent worst visibility days in 2000-2004, ammonium sulfate accounted for 75 to 87 percent of the calculated light extinction at the inland Class I areas in VISTAS, and 69 to 74 percent of the calculated light extinction for all but one of the coastal Class I areas in the VISTAS states. In particular, for Mammoth Cave National Park, sulfate particles resulting from SO<sub>2</sub> emissions contribute roughly 82 percent to the calculated light extinction on the haziest days. In contrast, ammonium nitrate contributed less than five percent of the calculated light extinction at the VISTAS Class I areas on the 20 percent worst visibility days. Particulate organic matter (organic carbon) accounted for 20 percent or less of the light extinction on the 20 percent worst visibility days at the VISTAS Class I areas.

VISTAS grouped its 18 Class I areas into two types, either “coastal” or “inland” (sometimes referred to as “mountain”) sites, based on common/similar characteristics (e.g., terrain, geography, meteorology), to better represent variations in model sensitivity and performance within the VISTAS region, and to describe the common factors influencing visibility conditions in the two types of Class I areas. Kentucky’s Class I area is an “inland” area.

Results from VISTAS’ emission sensitivity analyses indicate that sulfate particles resulting from SO<sub>2</sub> emissions are the dominant contributor to visibility impairment on the 20 percent worst days at all Class I areas in VISTAS, including the Kentucky area. Kentucky concluded that reducing SO<sub>2</sub> emissions from EGU and non-EGU point sources in the VISTAS states would have the greatest visibility benefits for the Kentucky Class I area. Because ammonium nitrate is a small contributor to PM<sub>2.5</sub> mass and visibility impairment on the 20

percent worst days at the inland Class I areas in VISTAS, which include Mammoth Cave National Park, the benefits of reducing NO<sub>x</sub> and NH<sub>3</sub> emissions at these sites are small.

The VISTAS sensitivity analyses show that VOC emissions from biogenic sources such as vegetation also contribute to visibility impairment. However, control of these biogenic sources of VOC would be extremely difficult, if not impossible. The anthropogenic sources of VOC emissions are minor compared to the biogenic sources. Therefore, controlling anthropogenic sources of VOC emissions would have little if any visibility benefits at the Class I areas in the VISTAS region, including Kentucky. The sensitivity analyses also show that reducing primary carbon from point sources, ground level sources, or fires is projected to have small to no visibility benefit at the VISTAS Class I areas.

Kentucky considered the factors listed in under 40 CFR 51.308(d)(3)(v) and in section III.E of this action to develop its LTS as described below. Kentucky, in conjunction with VISTAS, demonstrated in its SIP that elemental carbon (a product of highway and non-road diesel engines, agricultural burning, prescribed fires, and wildfires), fine soils (a product of construction activities and activities that generate fugitive dust), and ammonia are relatively minor contributors to visibility impairment at the Class I area in Kentucky. Kentucky considered agricultural and forestry smoke management techniques to address visibility impacts from elemental carbon. KYDAQ has an open burning regulation (401 KAR 63:005) which addresses the issues laid out in the EPA's 1998 *Interim Air Quality Policy on Wildland and Prescribed Fires* available at: <http://www.epa.gov/ttncaaa1/t1/memoranda/firefnl.pdf>. With regard to fine soils, the Commonwealth considered those activities that generate fugitive dust, including construction activities. With regard to construction activities, KYDAQ has a fugitive emissions regulation (401 KAR 63:010) which addresses fugitive dust emissions. The Kentucky



regulations, 401 KAR 63:005 and 401 KAR 63:010, are both approved regulations incorporated into the Kentucky SIP, and provide additional support to aid the Commonwealth with meeting its RPGs for this first implementation period. With regard to ammonia, the Commonwealth has chosen not to develop controls for ammonia emissions from Kentucky sources in this first implementation period because of its relatively minor contribution to visibility impairment. EPA concurs with the Commonwealth's technical demonstration showing that elemental carbon, fine soils, and ammonia are not significant contributors to visibility in the Commonwealth's Class I area, and therefore, finds that Kentucky has adequately satisfied 40 CFR 51.308(d)(3)(v). EPA's TSD to this Federal Register action and Kentucky's SIP provide more details on the Commonwealth's consideration of these factors for Kentucky's LTS.

The emissions sensitivity analyses conducted by VISTAS predict that reductions in SO<sub>2</sub> emissions from EGU and non-EGU industrial point sources will result in the greatest improvements in visibility in the Class I areas in the VISTAS region, more than any other visibility-impairing pollutant. Specific to Kentucky, the VISTAS sensitivity analysis projects visibility benefits in Mammoth Cave National Park from SO<sub>2</sub> reductions from EGUs in nearby VISTAS states. Additional, smaller benefits are projected from SO<sub>2</sub> emissions reductions from non-utility industrial point sources. SO<sub>2</sub> emissions contributions to visibility impairment from other RPO regions are comparatively small in contrast to the VISTAS states' contributions, and, thus, controlling sources outside of the VISTAS region is predicted to provide less significant improvements in visibility in the Class I areas in VISTAS.

Taking the VISTAS sensitivity analyses results into consideration, Kentucky concluded that reducing SO<sub>2</sub> emissions from EGU and non-EGU point sources in certain VISTAS states, states in the Midwest Regional Planning Organization and Mid-Atlantic/Northeast Visibility

Union (MANE-VU) regions, and outside the modeling domain would have the greatest visibility benefits for the Kentucky Class I area. The Commonwealth chose to focus solely on evaluating certain SO<sub>2</sub> sources contributing to visibility impairment to the Commonwealth's Class I area for additional emissions reductions for reasonable progress in this first implementation period (described in sections V.C.4 and V.C.5 of this notice). EPA agrees with the Commonwealth's analyses and conclusions used to determine the pollutants and source categories that most contribute to visibility impairment in the Class I area, and finds the Commonwealth's approach to focus on developing a LTS that includes largely additional measures for point sources of SO<sub>2</sub> emissions to be appropriate.

SO<sub>2</sub> sources for which it is demonstrated that no additional controls are reasonable in this current implementation period will not be exempted from future assessments for controls in subsequent implementation periods or, when appropriate, from the five-year periodic SIP reviews. In future implementation periods, additional controls on these SO<sub>2</sub> sources evaluated in the first implementation period may be determined to be reasonable, based on a reasonable progress control evaluation, for continued progress toward natural conditions for the 20 percent worst days and to avoid further degradation of the 20 percent best days. Similarly, in subsequent implementation periods, the Commonwealth may use different criteria for identifying sources for evaluation and may consider other pollutants as visibility conditions change over time.

#### **4. Procedure for Identifying Sources to Evaluate for Reasonable Progress Controls in Kentucky and Surrounding Areas**

As discussed in section V.C.3 of this action, through comprehensive evaluations by VISTAS and the Southern Appalachian Mountains Initiative (SAMI),<sup>11</sup> the VISTAS states

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<sup>11</sup> Prior to VISTAS, the southern states cooperated in a voluntary regional partnership "to identify and recommend reasonable measures to remedy existing and prevent future adverse effects from human-induced air pollution on the air quality related values of the Southern Appalachian Mountains." States cooperated with FLMs, the EPA,

concluded that sulfate particles resulting from SO<sub>2</sub> emissions account for the greatest portion of the regional haze affecting the Class I areas in VISTAS states, including those in Kentucky. Utility and non-utility boilers are the main sources of SO<sub>2</sub> emissions within the southeastern United States. VISTAS developed a methodology for Kentucky, which enables the Commonwealth to focus its reasonable progress analysis on those geographic regions and source categories that impact visibility at its Class I area. Recognizing that there was neither sufficient time nor adequate resources available to evaluate all emissions units within a given area of influence (AOI) around each Class I area that Kentucky's sources impact, the Commonwealth established a threshold to determine which emissions units would be evaluated for reasonable progress control. In applying this methodology, KYDAQ first calculated the fractional contribution to visibility impairment from all emissions units within the SO<sub>2</sub> AOI for its Class I area, and those surrounding areas in other states potentially impacted by emissions from emissions units in Kentucky. The Commonwealth then identified those emissions units with a contribution of one percent or more to the visibility impairment at that particular Class I area, and evaluated each of these units for control measures for reasonable progress, using the following four "reasonable progress factors" as required under 40 CFR 51.308(d)(1)(i)(A): (i) cost of compliance; (ii) time necessary for compliance; (iii) energy and non-air quality environmental impacts of compliance; and (iv) remaining useful life of the emissions unit.

Kentucky's SO<sub>2</sub> AOI methodology captured greater than 50 percent of the total point source SO<sub>2</sub> contribution to visibility impairment in the Mammoth Cave Class I area, and required an evaluation of 19 emissions units (10 of which are located in Kentucky). Capturing a significantly greater percentage of the total contribution would involve an evaluation of many

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industry, environmental organizations, and academia to complete a technical assessment of the impacts of acid deposition, ozone, and fine particles on sensitive resources in the Southern Appalachians. The SAMI Final Report was delivered in August 2002.

more emissions units that have substantially less impact. EPA believes the approach developed by VISTAS and implemented for the Class I area in Kentucky is a reasonable methodology to prioritize the most significant contributors to regional haze and to identify sources to assess for reasonable progress control in the Commonwealth's Class I area. The approach is consistent with EPA's Reasonable Progress Guidance. The technical approach of VISTAS and Kentucky was objective and based on several analyses, which included a large universe of emissions units within and surrounding the Commonwealth of Kentucky and all of the 18 VISTAS Class I areas. It also included an analysis of the VISTAS emissions units affecting nearby Class I areas surrounding the VISTAS states that are located in other RPOs' Class I areas.

## 5. Application of the Four CAA factors in the Reasonable Progress Analysis

KYDAQ identified 10 emissions units at five facilities in Kentucky (see Table 4) with SO<sub>2</sub> emissions that were above the Commonwealth's minimum threshold for reasonable progress evaluation because they were modeled to fall within the sulfate AOI of any Class I area and have a one percent or greater contribution to the sulfate visibility impairment to at least one Class I area.<sup>12</sup>

Nine of these 10 emissions units were already subject to CAIR. The reasonable progress analyses for these units are discussed in section V.C.5.B. KYDAQ determined that the only unit not subject to CAIR that falls within the sulfate AOI of any Class I area and contributes one percent or more to visibility impairment is located at Century Aluminum of KY LLC.

**Table 4: Kentucky Facilities Subject to Reasonable Progress Analysis**

<p><b>Facilities With a Unit Subject to Reasonable Progress Analysis</b> Century Aluminum of KY LLC, Potlines 1-4</p>
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<sup>12</sup> See also EPA's TSD, section III.C.2, fractional contribution analysis tables for each Class I area, excerpted from the Kentucky SIP, Appendix H.

**Facilities With Unit(s) Subject to CAIR Within AOI of Any Class I Area**

Kentucky Utilities Co Green River Station Units 003, 004

Louisville Gas &amp; Electric, Mill Creek Units 02, 03, 04

Tennessee Valley Authority (TVA) Paradise Steam Plant Units 001, 002, 003

Western KY Energy Corp Wilson Station Unit 001

**A. Facilities with an Emissions Unit Subject to Reasonable Progress Analysis**

KYDAQ analyzed whether SO<sub>2</sub> controls should be required for one unit at one facility, Century Aluminum, based on a consideration of the four factors set out in the CAA and EPA's regulations. For the limited purpose of evaluating the cost of compliance for the reasonable progress assessment in this first regional haze SIP for the non-EGUs, KYDAQ concluded that it was not equitable to require non-EGUs to bear a greater economic burden than EGUs for a given control strategy. Using CAIR as a guide, KYDAQ used a cost of \$2,000 per ton of SO<sub>2</sub> controlled or reduced as a threshold for cost effectiveness.

The Century Aluminum facility in Hawesville, Kentucky, has four potlines with 2002 base year emissions of 4,985 tons per year of SO<sub>2</sub> which were identified as having a significant contribution at the Mammoth Cave Class I area. VISTAS evaluated control options and costs for sources within the AOI for the Class I areas of concern. VISTAS used EPA's AirControlNet software to evaluate control options and costs for controls. The cost effectiveness of SO<sub>2</sub> control suggested by the VISTAS control cost spreadsheet for potlines 1-4 at Century Aluminum is \$14,207 per ton of SO<sub>2</sub> removed. Since the cost of compliance for the control option is over seven times greater than the Commonwealth's cost-effectiveness threshold for reasonable progress, KYDAQ concludes that there are no cost-effective controls available for these Century Aluminum units at this time within the cost threshold established for this reasonable progress assessment for the first implementation period.

KYDAQ deemed the three remaining statutory factors (i.e., time necessary for compliance, energy and non-air quality environmental impacts of compliance, and remaining useful life of the emissions unit) as not applicable since there were no cost-effective controls to evaluate. KYDAQ concluded, based on its evaluation of the Century Aluminum facility, that no further controls are warranted at this time. After reviewing KYDAQ's methodology and analyses, EPA finds Kentucky's conclusion that no further controls are necessary at this time acceptable. EPA finds that Kentucky adequately evaluated the control technologies available at the time of its analysis and applicable to this type of facility and consistently applied its criteria for reasonable compliance costs. The Commonwealth also included appropriate documentation in its SIP of the technical analysis it used to assess the need for and implementation of reasonable progress controls. Although the use of a specific threshold for assessing costs means that a state may not fully consider available emissions reduction measures above its threshold that would result in meaningful visibility improvement, EPA believes that the Kentucky SIP still ensures reasonable progress. In proposing to approve Kentucky's reasonable progress analysis, EPA is placing great weight on the fact that there is no indication in the SIP submittal that Kentucky, as a result of using a specific cost effectiveness threshold, rejected potential reasonable progress measures that would have had a meaningful impact on visibility in its Class I area. EPA notes that given the emissions reductions resulting from CAIR, Kentucky's BART determinations, and the measures in nearby states, the visibility improvements projected for the affected Class I area are in excess of that needed to be on the uniform rate of progress glidepath.

**B. Emissions Units Subject to CAIR Within AOI of Any Class I Area**

Nine of the 10 emissions units identified for a reasonable progress control analysis are EGUs. These nine EGUs, located at four facilities, are: Kentucky Utilities Co. Green River

Station, units 003 and 004; Louisville Gas & Electric, Mill Creek, units 02, 03, and 04; TVA Paradise Steam Plant, units 001, 002, 003; and Western KY Energy Corp, Wilson Station, unit 001.

To determine whether any additional controls beyond those required by CAIR would be considered reasonable for Kentucky's EGUs for this first implementation period, KYDAQ evaluated the SO<sub>2</sub> reductions expected from the EGU sector based upon results of the Integrated Planning Model (IPM) as applied by VISTAS to estimate the impacts region-wide of all the anticipated EGU controls, including CAIR. The EGUs located in Kentucky are expected to reduce their 2002 SO<sub>2</sub> emissions by approximately 54 percent by 2018.

To further evaluate whether CAIR requirements will satisfy reasonable progress for SO<sub>2</sub> for EGUs, KYDAQ considered the four reasonable progress factors set forth in EPA's RHR as they apply to the Commonwealth's entire EGU sector in sections 7.7 and 7.8 of the Kentucky SIP. The Commonwealth also reviewed CAIR requirements that include 2015 as the "earliest reasonable deadline for compliance" for EGUs installing retrofits. *See* 70 FR 25162, 25197-25198 (May 12, 2005). This is a particularly relevant consideration because CAIR addresses the reasonable progress factors of cost and time necessary for compliance. In the preamble to CAIR, EPA recognized there are a number of factors that influence compliance with the emission reduction requirements set forth in CAIR, which make the 2015 compliance date reasonable. For example, each EGU retrofit requires a large pool of specialized labor resources, which exist in limited quantities. Retrofitting an EGU can be a capital-intensive venture. Allowing retrofits to be installed over time enables the industry to learn from early installations. Lastly, EGU retrofits over time minimize disruption of the power grid by enabling industry to take advantage of planned outages.

Since EPA made the determination in CAIR that the earliest reasonable deadline for compliance for reducing emissions was 2015, KYDAQ concluded that the emissions reductions required by CAIR constitute reasonable measures for Kentucky EGUs during this first assessment period (between baseline and 2018) based on a consideration of the reasonable progress statutory factors and EPA's determination in CAIR that the earliest reasonable deadline for compliance with CAIR is 2015. This conclusion is bolstered by the fact that, as discussed in section V.C.7, visibility improvement at Mammoth Cave National Park is projected to exceed the uniform rate of progress in this first implementation period. KYDAQ stated in its SIP that the Commonwealth intends to re-evaluate the IPM predictions of SO<sub>2</sub> reductions for CAIR at the time of the next periodic report to ensure that the reductions predicted by IPM for CAIR are taking place where expected and needed. If KYDAQ's assessment for the periodic report indicates that its emissions are likely to exceed the 2018 projections, then the Commonwealth may re-evaluate the four factors to re-assess the LTS, as KYDAQ noted in its SIP.

Prior to the CAIR remand by the D.C. Circuit, EPA believed the Commonwealth's demonstration that no additional controls beyond CAIR are reasonable for SO<sub>2</sub> for affected Kentucky EGUs for the first implementation period to be acceptable. In this instance, EPA considered the visibility improvement at Class I areas in Kentucky and affected nearby states, the time necessary for compliance, the cost of compliance, and available reasonable controls, and EPA's belief that the CAIR requirements reflected the most cost-effective controls that can be achieved over the CAIR SO<sub>2</sub> compliance timeframe, which spans out to 2015 and overlaps most of the first regional haze implementation period. However, as explained in section IV of this action, the Commonwealth's demonstration regarding CAIR and reasonable progress for EGUs, and other provisions in this SIP revision, are based on CAIR and thus, the Agency proposes



today to issue a limited approval and a limited disapproval of the Commonwealth's regional haze SIP revision.

## **6. BART**

BART is an element of Kentucky's LTS for the first implementation period. The BART evaluation process consists of three components: (a) an identification of all the BART-eligible sources, (b) an assessment of whether the BART-eligible sources are subject to BART, and (c) a determination of the BART controls. These components, as addressed by KYDAQ and KYDAQ's findings, are discussed as follows.

### **A. BART-Eligible Sources**

The first phase of a BART evaluation is to identify all the BART-eligible sources within the state's boundaries. KYDAQ identified the BART-eligible sources in Kentucky by utilizing the three eligibility criteria in the BART Guidelines (70 FR 39158) and EPA's regulations (40 CFR 51.301): (1) one or more emissions units at the facility fit within one of the 26 categories listed in the BART Guidelines; (2) the emissions units were not in operation prior to August 7, 1962, and were in existence on August 7, 1977; and (3) these units have the potential to emit 250 tons or more per year of any visibility-impairing pollutant.

The BART Guidelines also direct states to address SO<sub>2</sub>, NO<sub>x</sub> and direct PM (including both PM<sub>10</sub> and PM<sub>2.5</sub>) emissions as visibility-impairment pollutants, and to exercise judgment in determining whether VOC or ammonia emissions from a source impair visibility in an area. 70 FR 39160. VISTAS modeling demonstrated that VOC from anthropogenic sources and ammonia from point sources are not significant visibility-impairing pollutants in Kentucky, as discussed in section V.C.3 of this action. KYDAQ has determined, based on the VISTAS modeling, that ammonia emissions from the Commonwealth's point sources are not anticipated

to cause or contribute significantly to any impairment of visibility in Class I areas and should be exempt for BART purposes.

## **B. BART-Subject Sources**

The second phase of the BART evaluation is to identify those BART-eligible sources that may reasonably be anticipated to cause or contribute to visibility impairment at any Class I area, i.e., those sources that are subject to BART. The BART Guidelines allow states to consider exempting some BART-eligible sources from further BART review because they may not reasonably be anticipated to cause or contribute to any visibility impairment in a Class I area. Consistent with the BART Guidelines, Kentucky required each of its BART-eligible sources to develop and submit dispersion modeling to assess the extent of their contribution to visibility impairment at surrounding Class I areas.

### *1. Modeling Methodology*

The BART Guidelines allow states to use the CALPUFF<sup>13</sup> modeling system (CALPUFF) or another appropriate model to predict the visibility impacts from a single source on a Class I area, and therefore, to determine whether an individual source is anticipated to cause or contribute to impairment of visibility in Class I areas, i.e., “is subject to BART.” The Guidelines state that EPA believes that CALPUFF is the best regulatory modeling application currently available for predicting a single source’s contribution to visibility impairment (70 FR 39162). Kentucky, in coordination with VISTAS, used the CALPUFF modeling system to determine whether individual sources in Kentucky were subject to or exempt from BART.

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<sup>13</sup>Note that our reference to CALPUFF encompasses the entire CALPUFF modeling system, which includes the CALMET, CALPUFF, and CALPOST models and other pre and post processors. The different versions of CALPUFF have corresponding versions of CALMET, CALPOST, etc. which may not be compatible with previous versions (e.g., the output from a newer version of CALMET may not be compatible with an older version of CALPUFF). The different versions of the CALPUFF modeling system are available from the model developer on the following website: <http://www.src.com/verio/download/download.htm>.

The BART Guidelines also recommend that states develop a modeling protocol for making individual source attributions and suggest that states may want to consult with EPA and their RPO to address any issues prior to modeling. The VISTAS states, including Kentucky, developed a “Protocol for the Application of CALPUFF for BART Analyses.” Stakeholders, including EPA, FLMS, industrial sources, trade groups, and other interested parties, actively participated in the development and review of the VISTAS protocol.

VISTAS developed a post-processing approach to use the new IMPROVE equation with the CALPUFF model results so that the BART analyses could consider both the old and new IMPROVE equations. KYDAQ sent a letter to EPA justifying the need for this post-processing approach, and the EPA Region 4 Regional Administrator sent the Commonwealth a letter of approval dated January 17, 2008. Kentucky’s justification included a method to process the CALPUFF output and a rationale on the benefits of using the new IMPROVE equation. The Commonwealth and Region 4 letters are located in Appendix L.9 of the June 25, 2008, Kentucky regional haze SIP submittal and can be accessed at [www.regulations.gov](http://www.regulations.gov) using Docket ID No. EPA-R04-OAR-2009-0783.

## *2. Contribution Threshold*

For states using modeling to determine the applicability of BART to single sources, the BART Guidelines note that the first step is to set a contribution threshold to assess whether the impact of a single source is sufficient to cause or contribute to visibility impairment at a Class I area. The BART Guidelines state that, “A single source that is responsible for a 1.0 deciview change or more should be considered to ‘cause’ visibility impairment.” The BART Guidelines also state that “the appropriate threshold for determining whether a source ‘contributes to visibility impairment’ may reasonably differ across states,” but, “[a]s a general matter, any

threshold that you use for determining whether a source ‘contributes’ to visibility impairment should not be higher than 0.5 deciviews.” The Guidelines affirm that states are free to use a lower threshold if they conclude that the location of a large number of BART-eligible sources in proximity of a Class I area justifies this approach.

Kentucky used a contribution threshold of 0.5 deciview for determining which sources are subject to BART. Kentucky concluded that, considering the results of the visibility impacts modeling conducted, a 0.5 deciview threshold was appropriate and a lower threshold was not warranted since the majority of the visibility impacts were well below 0.5 deciview and the sources are distributed across the Commonwealth. Also, even though several sources impacted each Class I area, the overall visibility impacts were low from the sources. As stated in the BART Guidelines, where a state concludes that a large number of these BART-eligible sources within proximity of a Class I area justify a lower threshold, it may warrant establishing a lower contribution threshold. *See* 70 FR 39161-39162 (July 6, 2005). EPA is proposing to agree with Kentucky that the overall impacts of these sources are not sufficient to warrant a lower contribution threshold and that a 0.5 deciview threshold was appropriate in this instance.

### *3. Identification of Sources Subject to BART*

Kentucky initially identified 31 facilities with BART-eligible sources. The Commonwealth subsequently determined that five of these sources are exempt from being considered BART-eligible. Arkema requested and KYDAQ established an enforceable permit emission limit (title V permit number V 04-044, (R-02) as revised January 11, 2007), to limit its potential to emit to lower than 250 tons per year of any pollutant and thus, the source no longer meets the BART eligibility criteria. E.I. Dupont Inc, Cc Metals & Alloys Inc., and ISP Chemicals Inc., submitted information, which KYDAQ corroborated, documenting that the

facilities did not meet the BART eligibility criteria discussed in section V.C.6.A. Kingsford Manufacturing Co. provided documentation that the unit that was BART-eligible had been reconstructed in 2002 (consistent with EPA’s definition of “reconstruction” in 40 CFR 51.301) and was subject to a Best Available Control Technology Analysis at that time. (EPA’s BART Guidelines address reconstructed sources in the context of BART eligibility on pages 70 FR 39159-39160.) Table 5 identifies the remaining 26 BART-eligible sources located in Kentucky, and of these, lists the five sources subject to BART.

**Table 5: Kentucky BART-Eligible and Subject-to-BART Sources**

<b>Facilities With Unit(s) Subject to BART Analysis</b>
AEP Big Sandy Plant E.ON U.S Mill Creek Station EKPC Cooper Station EKPC Spurlock Station TVA Paradise Plant
<b>Facilities With Unit(s) Found Not Subject to BART</b>
<p><b><i>EGU CAIR and BART Modeling (PM only) Exempt Sources<sup>14</sup></i></b></p> Duke Energy East Bend Station E.ON U.S. Brown Station E.ON U.S. Cane Run Station E.ON U.S. Ghent Station Henderson Power and Light Owensboro Municipal Utilities Western Kentucky Energy Coleman Station Western Kentucky Energy Green Station Western Kentucky Energy Reid/Henderson Station
<p><b><i>Non-EGU BART Modeling</i></b></p> AK Steel Corporation - Coke Manufacturing Plant AK Steel Corporation - Steel Plant Alcan Primary Products Corporation Arch Chemicals Inc. Calgon Carbon Corporation

<sup>14</sup>EGUs were only evaluated for PM emissions. The Commonwealth relied on CAIR to satisfy BART for SO<sub>2</sub> and NO<sub>x</sub> for its EGUs subject to CAIR, in accordance with 40 CFR 51.308(e)(4). Thus, SO<sub>2</sub> and NO<sub>x</sub> were not analyzed.

Century Aluminum Commonwealth Aluminum Lewisport LLC Marathon Petroleum Company Refinery Martin County Coal Corporation NewPage Corporation Wickliffe Paper Company Pinnacle Processing Inc. Westlake Vinyls Inc.
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All 12 of the non-EGU sources demonstrated that they are exempt from being subject to BART by modeling less than a 0.5 deciview visibility impact at the affected Class I areas. This modeling involved assessing the visibility impact of emissions of NO<sub>x</sub>, SO<sub>2</sub>, and PM<sub>10</sub> as applicable to individual facilities.

The 14 BART-eligible EGUs relied on Kentucky's decision to rely upon CAIR emission limits for SO<sub>2</sub> and NO<sub>x</sub> to satisfy their obligation to comply with BART requirements in accordance with 40 CFR 51.308(e)(4). Therefore, EGU sources only modeled PM<sub>10</sub> emissions. Nine of the 14 EGUs demonstrated that their PM<sub>10</sub> emissions do not contribute to visibility impairment in any Class I area. Modeling for five of the 14 EGUs demonstrated that their PM<sub>10</sub> emissions exceeded the 0.5 deciview contribution threshold and thus, required a BART analysis. The five sources found subject to BART are EGUs that are subject to BART because of the modeled impacts on visibility of their inorganic condensable particulate emissions (i.e., sulfite (SO<sub>3</sub>)/sulfuric acid (H<sub>2</sub>SO<sub>4</sub>)). These BART-subject sources were required to complete BART determination modeling, which included an analysis of the five CAA BART factors, to determine appropriate BART controls for PM.

Prior to the CAIR remand, the Commonwealth's reliance on CAIR to satisfy BART for NO<sub>x</sub> and SO<sub>2</sub> for affected CAIR EGUs was fully approvable and in accordance with 40 CFR 51.308(e)(4). However, as explained in section IV of this action, the BART assessments for CAIR EGUs for NO<sub>x</sub> and SO<sub>2</sub> and other provisions in the regional haze SIP revision are based

on CAIR, and thus, the Agency proposes today to issue a limited approval and a limited disapproval of the Commonwealth's regional haze SIP revision.

### **C. BART Determinations**

Five BART-eligible EGU sources (i.e., AEP Big Sandy Plant, E.ON U.S Mill Creek Station, EKPC Cooper Station, EKPC Spurlock Station, and TVA Paradise Plant) had modeled visibility impacts of more than the 0.5 deciview threshold for BART exemption. These five facilities are therefore considered to be subject to BART. Consequently, they each submitted permit applications to the Commonwealth that included their proposed BART determinations.

In accordance with the BART Guidelines, to determine the level of control that represents BART for each source, the Commonwealth first reviewed existing controls on these units to assess whether these constituted the best controls currently available, then identified what other technically feasible controls are available, and finally, evaluated the technically feasible controls using the five BART statutory factors. The Commonwealth's evaluations and conclusions, and EPA's assessment, are summarized below.

#### *1. AEP Big Sandy Plant*

AEP Big Sandy plant is a coal-fired power station located near Louisa, Kentucky, with two EGUs, units 1 and 2, with nominal generating capacities of 281 and 816 MW, respectively. KYDAQ determined that units 1 and 2 and an auxiliary boiler are BART-eligible sources. Subsequently, the auxiliary boiler at the Big Sandy Plant was removed from the analysis since it is only operated for short periods of time during startup operations and for periodic mandated emissions tests that cannot be coordinated with startup operations, as confirmed in AEP's BART submittal to Kentucky. AEP performed a full analysis of BART for particulates, with its primary focus on the condensable fraction due to the minimal impact from the primary particulates since

both units are currently equipped with electrostatic precipitators (ESPs) for primary particulate control.

AEP evaluated five combinations of condensable particulate control options for the two units. For unit 1, AEP only considered injecting ammonia or injecting trona, a mineral composed primarily of sodium and carbonate, for the reduction of inorganic condensables. For unit 2, AEP considered injecting ammonia, injecting trona, or installing a wet flue gas desulfurization (FGD) system. AEP determined that unit 1 was not a viable candidate for installation of a wet FGD system due to its age. This unit will be 50 years old in 2013. While a specific retirement date has not yet been established for this unit, the likelihood of this unit continuing operations in its present form for 15 to 20 years is low.<sup>15</sup> Unit 2 is currently expected to run until at least the 2033-2035 timeframe, so retrofit controls are considered a viable option for this unit. In addition, AEP determined that the options involving injecting trona on either unit at the Big Sandy Plant were technically infeasible. Based on the experience of AEP at units where sorbents are injected for the reduction of inorganic condensables, the presently installed ESPs at both Big Sandy units are unsuitable for trona injection.

For AEP Big Sandy Plant units 1 and 2, the company agreed to install ammonia injection controls on unit 1 and a FGD on unit 2. KYDAQ reviewed the source's BART modeling determination, the available data, and considering the statutory factors, KYDAQ has determined that the controls proposed by AEP are reasonable and appropriate for addressing condensable particulates and their impacts on nearby Class I areas.

## *2. E.ON U.S. Mill Creek Station*

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<sup>15</sup> On June 9, 2011, AEP announced that Big Sandy unit 1 would be retired by December 31, 2014, and rebuilt as a natural gas-fired plant by December 31, 2015.



E.ON U.S. Mill Creek Station consists of four pulverized coal-fired boilers, combusting high sulfur bituminous coal. The source evaluated installing a pulse jet fabric filter (PJFF) to increase primary particulate control and sorbent injection and a wet ESP to improve  $\text{SO}_3/\text{H}_2\text{SO}_4$  control. The existing cold-side ESPs at all four units at the Mill Creek Station are already demonstrating high removal efficiencies of 99 percent and all four units are already equipped with wet FGD systems for  $\text{SO}_2$  removal, limiting the additional available options for  $\text{SO}_3$  condensable particulate control. The incremental cost effectiveness of PJFF and a wet ESP ranged from \$20,380 to \$52,190 per ton of PM reduced and these options were not considered further. Sorbent injection was more cost effective, ranging from \$4,293 to \$5,017 per ton of PM reduced. As indicated in the September 24, 2007, E.ON U.S. Mill Creek proposed BART determination submittal to KYDAQ, the average cost effectiveness for installing sorbent controls on all four Mill Creek units is about the same as that for only units 3 and 4 (an estimated \$5.1 million per deciview). However, sorbent injection at all four units would require an additional total capital investment of \$8.8 million above the \$10.5 million total capital investment for controls only on the larger units 3 and 4, and the BART modeling demonstrated that controlling units 3 and 4 alone can achieve an estimated 70 percent of the total deciview improvement that would result from controlling all four units (0.85 deciview for controlling units 3 and 4 compared to 1.18 deciviews from controlling all four units). After completing the BART analysis for PM, E.ON U.S. therefore recommended sorbent injection for the reduction of  $\text{SO}_3$  emissions in the flue gas for units 3 and 4. The control scenario also included continued utilization of the existing ESPs to control PM emissions. Given the extra cost for the lesser additional deciview improvement for units 1 and 2 (approximately \$8.8 million for an additional 0.3 deciview

improvement), KYDAQ agreed that BART for PM for the Mill Creek Station is the installation of sorbent injection controls on the larger units 3 and 4.

In its May 28, 2010, amendment to its June 25, 2008, regional haze SIP submittal, Kentucky modified the emission limits for E.ON U.S. Mill Creek units 3 and 4. This change modifies the SIP and the BART title V permit emission limits to 64.3 pounds per hour (lb/hr) and 76.5 lb/hr, respectively, for H<sub>2</sub>SO<sub>4</sub> in place of a 0.015 lb/million British Thermal Units per hour (MMBtu/hr) limit. This change was made for the E.ON U.S. Mill Creek facility because the company clarified that the 0.015 lb/MMBtu limits in its September 24, 2007, submittal to KYDAQ were converted to lb/MMBtu values in the submittal for illustrative purposes only and were not intended to be included in the SIP. The lb/hr values were the primary model input values utilized in the CALPUFF modeling and thus, Kentucky agreed that these values are appropriate for incorporation into Mill Creek Station's title V permit.

### *3. EKPC Cooper Station and Spurlock Station*

EKPC operates two pulverized coal-fired EGUs at Cooper Station with maximum rated heat inputs of 1,080 and 2,089 MMBtu/hr and two pulverized coal-fired EGUs at Spurlock Station with maximum rated heat inputs of 3,500 and 4,850 MMBtu/hr. EKPC evaluated fabric filtration and an ESP with and without FGD for PM. Since the company agreed to install the most stringent option at both facilities, it did not further develop the BART five-factor control analysis. Per a consent decree and for BART, EKPC agreed to install a wet FGD and a wet ESP at EKPC Spurlock units 1 and 2 and also at Cooper units 1 and 2 that will address condensable particulate emissions and other visibility-impairing pollutants. A July 2, 2007, EKPC consent decree provides a filterable PM emission rate of 0.030 lb/MMBtu, which was utilized to demonstrate modeled visibility improvement.

In the May 28, 2010, amendment to its June 25, 2008, regional haze SIP submittal, Kentucky modified the requirements for Cooper Station units 1 and 2 in response to a March 18, 2009, request from EKPC. EKPC submitted revised BART determination modeling that substituted dry FGD and PJFF emission controls for the wet FGD and wet ESP controls. EKPC determined that the use of a dry FGD system combined with a PJFF for Cooper units 1 and 2 meets or exceeds the performance of the wet FGD/wet ESP system previously proposed as BART. The anticipated total PM emission control achieved by the dry FGD/PJFF control train is higher than the previously approved wet FGD/wet ESP, and the predicted PM visibility impacts are comparable. Accordingly, EKPC submitted a revised BART analysis in support of its request that KYDAQ amend the regional haze SIP to allow for the substitution of the dry FGD/PJFF control train in place of the wet FGD/wet ESP. KYDAQ concurred with EKPC's request. There is no change in the BART emission limits for EKPC.

#### *4. TVA Paradise Plant*

The TVA Paradise Fossil Plant, located in Muhlenberg County, Kentucky, has three cyclone steam generators burning pulverized coal that are considered subject to BART. Units 1 and 2 are nominally rated at approximately 704 MW each, and unit 3 is nominally rated at approximately 1,150 MW. Units 1 and 2 use wet venturi scrubbers to control PM emissions, and unit 3 uses an ESP.

Because all three units at TVA Paradise are subject to CAIR, the BART analysis only considers PM<sub>10</sub> emissions. The modeling analysis also demonstrates that approximately 90 percent of the visibility impacts at the affected Class I areas can be attributed to condensable PM<sub>10</sub> emissions (i.e., SO<sub>3</sub>/H<sub>2</sub>SO<sub>4</sub>). Thus, the engineering evaluation for TVA Paradise focused on control of SO<sub>3</sub>/H<sub>2</sub>SO<sub>4</sub> emissions. The total capital investment for a wet ESP ranges from

about \$100 million for unit 1 or 2 to almost \$156 million for unit 3. Total annual costs range from about \$29 million to \$44 million per year. The corresponding total cost effectiveness ranges from \$27,594 to \$39,263 per ton of  $\text{SO}_3/\text{H}_2\text{SO}_4$ . TVA determined that a wet ESP is economically infeasible for TVA Paradise and should, therefore, be eliminated from consideration as a basis for BART. The total capital investment for hydrated lime injection ranges from \$4.2 million for unit 1 or 2 to \$8.4 million for unit 3. Total annual costs range from about \$2.3 million to \$4.4 million per year. The corresponding cost effectiveness ranges from \$3,265 to \$6,776 per ton of  $\text{SO}_3/\text{H}_2\text{SO}_4$ . Although considerably less expensive than a wet ESP, TVA considered the cost effectiveness values for lime injection as still too high to be considered as an acceptable cost of compliance for BART. However, TVA plans to install lime injection on all three units at TVA Paradise to mitigate stack opacity. These controls are already required to be in place.<sup>16</sup>

Since TVA had previously indicated to KYDAQ its plans to install hydrated lime injection controls on TVA Paradise units 1-3 to mitigate opacity due to  $\text{SO}_3$  emissions and that additional controls are not cost-effective at this time, KYDAQ has determined BART to be no additional control for TVA Paradise units 1-3 since the hydrated lime injection controls for TVA Paradise units 1-3 are already required as a Federally enforceable provision of the SIP, will achieve the reduction in visibility impacts listed in the Kentucky regional haze SIP, and are now included in TVA Paradise's title V permit. Specifically, the schedule for the installation of hydrated lime injection controls for TVA Paradise units 1-3 required construction to begin in mid-2009 on unit 3 with construction for unit 1 and 2 to follow; and for controls to be operating

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<sup>16</sup> On December 15, 2009, KYDAQ issued permit #V -07-01 8 R 1 pursuant to Kentucky's Administrative Regulations (KAR) at 401 KAR 52:020 (title V regulations). The December 15, 2009, permit incorporated the requirement for the installation of pollution controls for the reduction of sulfuric acid mist at the TVA Paradise Fossil Fuel Plant.

on all three TVA Paradise units possibly by the fall of 2010. For these reasons, KYDAQ chose to concur with the TVA Paradise plant BART assessment and concluded that BART is no additional control.

#### 5. *EPA Assessment*

EPA agrees with Kentucky's analyses and conclusions for these five BART-subject EGU sources described above: AEP Big Sandy Plant, E.ON U.S Mill Creek Station, EKPC Cooper Station, EKPC Spurlock Station, and TVA Paradise Plant. EPA has reviewed the Commonwealth's analyses and concluded they were conducted in a manner that is consistent with EPA's BART Guidelines and EPA's *Air Pollution Control Cost Manual* (<http://www.epa.gov/ttn/catc1/products.html#cccinfo>). With regard to AEP's decision not to evaluate installation of a wet FGD on unit 1 because of its age, EPA would generally not rely on an assertion that the unit would shut down without a legally enforceable condition requiring shutdown of the unit at issue. Also, as the unit has now established a firm date for closure and a decision has been made to repower the unit to burn natural gas, requiring additional analysis would not likely change the conclusions of the BART analysis. Therefore, the conclusions reflect a reasonable application of EPA's guidance to these sources.

Prior to the CAIR remand, EPA believed the Commonwealth's demonstration that CAIR satisfies BART for SO<sub>2</sub> and NO<sub>x</sub> for affected EGUs for the first implementation period to be approvable and in accordance with 40 CFR 51.308(e)(4). However, as explained in section IV of this action, the Commonwealth's demonstration regarding CAIR and BART for EGUs, and other provisions in its regional haze SIP revision, are based on CAIR and thus, the Agency proposes today to issue a limited approval and a limited disapproval of the Commonwealth's regional haze SIP revision.

## *6. Enforceability of Limits*

The BART determinations for each of the facilities discussed above and the resulting emission limits are adopted by Kentucky into the Commonwealth's regional haze SIP submittal, in consent decrees, and will be included in the facilities' title V permits as follows:

AEP Big Sandy unit 1 and unit 2 will install ammonia injection controls on unit 1 and a FGD on unit 2. Inorganic condensable particulate emission limits (modeled as sulfates) will be limited to 101.0 lb/hr H<sub>2</sub>SO<sub>4</sub> and 127.0 lb/hr H<sub>2</sub>SO<sub>4</sub>. Emission limits and controls will be included in the source's title V permit as appropriate or on renewal. Compliance is to be as expeditiously as practicable, but no later than five years after EPA approves Kentucky's regional haze SIP.

E.ON U.S. Mill Creek will install sorbent injection controls on unit 3 and unit 4 to control SO<sub>3</sub> emissions and will continue to utilize existing ESPs to control PM emissions for units 1 through 4. Inorganic condensable particulate emission limits (modeled as sulfates) are 64.3 lb/hr H<sub>2</sub>SO<sub>4</sub> and 76.5 lb/hr H<sub>2</sub>SO<sub>4</sub>. Emission limits and controls will be included in the source's title V permit as appropriate or on renewal. Compliance shall be as expeditiously as practicable, but no later than five years after EPA approves Kentucky's regional haze SIP.

EKPC will install wet FGD and wet ESP on Spurlock units 1 and 2 and a dry FGD and fabric filtration on Cooper units 1 and 2. A July 2, 2007, EKPC consent decree provides for a filterable PM emission rate of 0.030 lb/MMBtu, which was utilized to demonstrate modeled visibility improvement. Emission limits and controls will be included in the source's title V permit as appropriate or on renewal. Compliance will be as expeditiously as practicable, but no later than five years after EPA approves Kentucky's regional haze SIP.

Although not for BART, TVA previously indicated to KYDAQ its plans to install hydrated lime injection controls on TVA Paradise units 1-3 to mitigate opacity due to SO<sub>3</sub> emissions. TVA has incorporated the requirement for SO<sub>3</sub> controls for Paradise Units 1-3 in its title V permit #V -07-01 8 R 1 issued December 15, 2009. In its proposed BART determination submittal to Kentucky, TVA noted its expectation to have hydrated lime injection controls operating on all three TVA Paradise units by the fall of 2010.

## **7. RPGs**

The RHR at 40 CFR 51.308(d)(1) requires states to establish RPGs for each Class I area within the state (expressed in deciviews) that provide for reasonable progress towards achieving natural visibility. VISTAS modeled visibility improvements under existing Federal and state regulations for the period 2004-2018, and additional control measures which the VISTAS states planned to implement in the first implementation period. At the time of VISTAS modeling, some of the other states with sources potentially impacting visibility at the Kentucky Class I area had not yet made final control determinations for BART and/or reasonable progress, and thus, these controls were not included in the modeling submitted by Kentucky. Any controls resulting from those determinations will provide additional emissions reductions and resulting visibility improvement, which give further assurances that Kentucky will achieve its RPGs. This modeling demonstrates that the 2018 base control scenario provides for an improvement in visibility better than the uniform rate of progress for the Kentucky Class I area for the most impaired days over the period of the implementation plan and ensures no degradation in visibility for the least impaired days over the same period.

As shown in Table 6 below, Kentucky's 2018 RPG for the 20 percent worst days provides greater visibility improvement by 2018 than the uniform rate of progress for the

Commonwealth's Class I area (i.e., 26.64 deciviews in 2018). Also, the RPG for the 20 percent best days provides greater visibility improvement by 2018 than current best day conditions. The modeling supporting the analysis of these RPGs is consistent with EPA guidance prior to the CAIR remand. The regional haze provisions specify that a state may not adopt a RPG that represents less visibility improvement than is expected to result from other CAA requirements during the implementation period. 40 CFR 51.308(d)(1)(vi). Therefore, the CAIR states with Class I areas, like Kentucky, took into account emissions reductions anticipated from CAIR in determining their 2018 RPGs.<sup>17</sup>

**Table 6 – Kentucky 2018 RPGs (in deciviews)**

Class I Area	Baseline Visibility - 20% Worst Days	2018 RPG - 20% Worst Days (Improvement from Baseline)	Uniform Rate of Progress at 2018 - 20% Worst Days (Improvement from Baseline)	Baseline Visibility - 20% Best Days	2018 RPG - 20% Best Days (Improvement from Baseline)
Mammoth Cave National Park	<b>31.37</b>	<b>25.56 (5.81)</b>	<b>26.64 (4.73)</b>	<b>16.51</b>	<b>15.57 (0.94)</b>

The RPGs for the Class I area in Kentucky are based on modeled projections of future conditions that were developed using the best available information at the time the analysis was done. These projections can be expected to change as additional information regarding future conditions becomes available. For example, new sources may be built, existing sources may shut down or modify production in response to changed economic circumstances, and facilities may change their emission characteristics as they install control equipment to comply with new

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<sup>17</sup> Many of the CAIR states without Class I areas similarly relied on CAIR emission reductions within the state to address some or all of their contribution to visibility impairment in other states' Class I areas, which the impacted Class I area state(s) used to set the RPGs for their Class I area(s). Certain surrounding non-CAIR states also relied on reductions due to CAIR in nearby states to develop their regional haze SIP submittals.



rules. It would be both impractical and resource-intensive to require a state to continually revise its RPGs every time an event affecting these future projections changed.

EPA recognized the problems of a rigid requirement to meet a long-term goal based on modeled projections of future visibility conditions, and addressed the uncertainties associated with RPGs in several ways. EPA made clear in the RHR that the RPG is not a mandatory standard which must be achieved by a particular date. *See* 64 FR at 35733. At the same time, EPA established a requirement for a midcourse review and, if necessary, correction of the states' regional haze plans. *See* 40 CFR 52.308(g). In particular, the RHR calls for a five-year progress review after submittal of the initial regional haze plan. The purpose of this progress review is to assess the effectiveness of emission management strategies in meeting the RPG and to provide an assessment of whether current implementation strategies are sufficient for the state or affected states to meet their RPGs. If a state concludes, based on its assessment, that the RPGs for a Class I area will not be met, the RHR requires the state to take appropriate action. *See* 40 CFR 52.308(h). The nature of the appropriate action will depend on the basis for the state's conclusion that the current strategies are insufficient to meet the RPGs. Kentucky specifically committed to follow this process in the LTS portion of its submittal.

EPA anticipates that the Transport Rule will result in similar or better improvements in visibility than predicted from CAIR. EPA has not yet assessed how the Transport Rule will affect any individual Class I area and has not modeled future conditions based on its implementation. By the time Kentucky is required to undertake its five-year progress review, however, it is likely that the impact of the Transport Rule and other measures on visibility can be meaningfully assessed. If, in particular Class I areas, the Transport Rule does not provide similar or greater benefits than CAIR and meeting the RPGs at its Class I Federal area is in jeopardy, the

Commonwealth will be required to address this circumstance in its five-year review.

Accordingly, EPA proposes to approve Kentucky's RPGs for the Mammoth Cave National Park.

#### **D. Coordination of RAVI and Regional Haze Requirements**

EPA's visibility regulations direct states to coordinate their RAVI LTS and monitoring provisions with those for regional haze, as explained in sections III.F and III.G of this action.

Under EPA's RAVI regulations, the RAVI portion of a state SIP must address any integral vistas identified by the FLMs pursuant to 40 CFR 51.304. An *integral vista* is defined in 40 CFR 51.301 as a "view perceived from within the mandatory Class I Federal area of a specific landmark or panorama located outside the boundary of the mandatory Class I Federal area."

Visibility in any mandatory Class I Federal area includes any integral vista associated with that area. The FLMs did not identify any integral vistas in Kentucky. In addition, the Class I area in Kentucky is neither experiencing RAVI, nor are any of its sources affected by the RAVI provisions. Thus, the June 25, 2008, Kentucky regional haze SIP submittal does not explicitly address the two requirements regarding coordination of the regional haze with the RAVI LTS and monitoring provisions. However, Kentucky previously made a commitment to address RAVI should the FLM certify visibility impairment from an individual source.<sup>18</sup> EPA finds that this regional haze submittal appropriately supplements and augments Kentucky's RAVI visibility provisions to address regional haze by updating the monitoring and LTS provisions as summarized below in this section.

In the June 25, 2008, submittal, KYDAQ updated its visibility monitoring program and developed a LTS to address regional haze. Also in this submittal, KYDAQ affirmed its

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<sup>18</sup> The Kentucky visibility SIP revisions to address Prevention of Significant Deterioration (PSD) provisions were submitted to EPA on February 20, 1986, and approved by EPA September 1, 1989 (54 FR 36311). The Commonwealth's visibility plan provisions were submitted on August 31, 1987, and approved July 12, 1988 (53 FR 26256). The nonattainment NSR provisions were submitted July 14, 2004, and approved July 11, 2006 (71 FR 38990).

commitment to complete items required in the future under EPA's RHR. Specifically, KYDAQ made a commitment to review and revise its regional haze implementation plan and submit a plan revision to EPA by July 31, 2018, and every 10 years thereafter. *See* 40 CFR 51.308(f). In accordance with the requirements listed in 40 CFR 51.308(g) of EPA's regional haze regulations and 40 CFR 51.306(c) of the RAVI LTS regulations, KYDAQ made a commitment to submit a report to EPA on progress towards the RPGs for each mandatory Class I area located within Kentucky and in each mandatory Class I area located outside Kentucky which may be affected by emissions from within Kentucky. The progress report is required to be in the form of a SIP revision and is due every five years following the initial submittal of the regional haze SIP. Consistent with EPA's monitoring regulations for RAVI and regional haze, Kentucky will rely on the IMPROVE network for compliance purposes, in addition to any RAVI monitoring that may be needed in the future. *See* 40 CFR 51.305, 40 CFR 51.308(d)(4). Also, the Kentucky new source review (NSR) rules, previously approved in the Commonwealth's SIP, continue to provide a framework for review and coordination with the FLMs on new sources which may have an adverse impact on visibility in either form (i.e., RAVI and/or regional haze) in any Class I Federal area. The Kentucky SIP contains a plan addressing the associated monitoring and reporting requirements. *See* 53 FR 26256 (July 12, 1988). Although EPA's approval of this plan neglected to remove the Federally promulgated provisions set forth in 40 CFR 52.936, EPA intends to correct this omission in a separate future rulemaking.

#### **E. Monitoring Strategy and Other Implementation Plan Requirements**

The primary monitoring network for regional haze in Kentucky is the IMPROVE network. As discussed in section V.B.2 of this action, there is currently one IMPROVE site in Kentucky, which serves as the monitoring site for Mammoth Cave National Park in Kentucky.

IMPROVE monitoring data from 2000-2004 serves as the baseline for the regional haze program, and is relied upon in the Kentucky regional haze submittal. In the submittal, Kentucky states its intention to rely on the IMPROVE network for complying with the regional haze monitoring requirement in EPA's RHR for the current and future regional haze implementation periods.

Data produced by the IMPROVE monitoring network will be used nearly continuously for preparing the five-year progress reports and the 10-year SIP revisions, each of which relies on analysis of the preceding five years of data. The Visibility Information Exchange Web System (VIEWS) web site has been maintained by VISTAS and the other RPOs to provide ready access to the IMPROVE data and data analysis tools. Kentucky is encouraging VISTAS and the other RPOs to maintain the VIEWS or a similar data management system to facilitate analysis of the IMPROVE data.

In addition to the IMPROVE measurements, the FLMs perform long-term limited monitoring that provides additional insight into progress toward regional haze goals. Such measurements include web cameras operated by the National Park Service at Mammoth Cave National Park. Also, Kentucky and the local air agencies in the Commonwealth operate a comprehensive PM<sub>2.5</sub> network of filter-based Federal reference method monitors, continuous mass monitors, and filter-based speciated monitors.

## **F. Consultation with States and FLMs**

### **1. Consultation with Other States**

In December 2006 and in May 2007, the State Air Directors from the VISTAS states held formal interstate consultation meetings. The purpose of the meetings was to discuss the methodology proposed by VISTAS for identifying sources to evaluate for reasonable progress.

The states invited FLM and EPA representatives to participate and to provide additional feedback. The Directors discussed the results of analyses showing contributions to visibility impairment from states to each of the Class I areas in the VISTAS region.

KYDAQ has evaluated the impact of sources on Class I areas in neighboring states. The state in which a Class I area is located is responsible for determining which sources, both inside and outside of that state, to evaluate for reasonable progress controls. Because many of these states had not yet defined their criteria for identifying sources to evaluate for reasonable progress, KYDAQ applied its AOI methodology to identify sources in the Commonwealth that have emissions units with impacts large enough to potentially warrant further evaluation and analysis. The Commonwealth identified no emissions units in Kentucky with a contribution of one percent or more to the visibility impairment at Class I areas in neighboring states.

Additionally, KYDAQ sent letters to the other states in the VISTAS region documenting its analysis using the Commonwealth's AOI methodology that no SO<sub>2</sub> emissions units in Kentucky contribute at least one percent to the visibility impairment at the Class I areas in those states. The documentation for these formal consultations is provided in Appendix J of Kentucky's SIP.

Regarding the impact of sources outside of the Commonwealth on the Class I area in Kentucky, KYDAQ sent letters to Indiana and Tennessee pertaining to emissions units within these states that the Commonwealth believes contributed one percent or higher to visibility impairment in the Kentucky Class I area. Kentucky identified six EGUs in Indiana and two EGUs in Tennessee as meeting its SO<sub>2</sub> AOI contribution threshold. Because the eight EGUs in these states are subject to CAIR, and Mammoth Cave National Park is projected to exceed the uniform rate of progress during the first implementation period, KYDAQ opted not to request any additional emissions reductions for reasonable progress for this implementation period.

Additionally, at that time, these neighboring states were still in the process of evaluating BART and reasonable progress for their sources. Any controls resulting from those determinations will provide additional emissions reductions and resulting visibility improvement, which gives further assurances that Kentucky will achieve its RPGs. Therefore, to be conservative, Kentucky opted not to rely on any additional emissions reductions from sources located outside the Commonwealth's boundaries beyond those already identified in Kentucky's regional haze SIP submittal and as discussed in section V.C.1 (Federal and state controls in place by 2018) of this action.

Kentucky received letters from the MANE-VU RPO States of Maine, New Jersey, New Hampshire, and Vermont in the spring of 2007, stating that based on MANE-VU's analysis of 2002 emissions data, Kentucky contributed to visibility impairment to Class I areas in those states. The MANE-VU states identified 14 EGU stacks in Kentucky that they would like to see controlled to 90 percent efficiency for SO<sub>2</sub>. They also requested a control strategy to provide a 28 percent reduction in SO<sub>2</sub> emissions from sources other than EGUs that would be equivalent to MANE-VU's proposed low sulfur fuel oil strategy. Of the 14 Kentucky EGUs identified by MANE-VU, 93 percent of those sources have existing SO<sub>2</sub> controls or will have SO<sub>2</sub> controls by 2015 or sooner. KYDAQ believes that these emissions reductions satisfy MANE-VU's request.

EPA finds that Kentucky has adequately addressed the consultation requirements in the RHR and appropriately documented its consultation with other states in its SIP submittal.

## **2. Consultation with the FLMs**

Through the VISTAS RPO, Kentucky and the nine other member states worked extensively with the FLMs from the U.S. Departments of the Interior and Agriculture to develop technical analyses that support the regional haze SIPs for the VISTAS states. The proposed

regional haze plan for Kentucky was out for public comment during the March to April 2008 time period. KYDAQ also provided a draft plan dated December 17, 2007, to the FLMs (and EPA) for review. Appendix N of the Kentucky regional haze SIP submittal includes the comment letters from the FLMs, which indicate that the FLMs appear to be generally supportive of the Commonwealth's regional haze SIP, and were pleased with the technical information summarized in the regional haze SIP narrative. The FLM comments mainly suggested that Kentucky insert language to further expand and/or clarify certain information. For example, the FLMs requested that KYDAQ discuss the linkage between the LTS and the Commonwealth's NSR/PSD program in the SIP narrative. Additionally, the FLMs asked KYDAQ to reiterate statements in the appendices regarding the conclusions of interstate consultation discussions in the SIP narrative. The FLMs also suggested that emission inventory data from 2002 in the SIP narrative be put with the projection data for 2009 and 2018 to aid the reader with understanding the anticipated effects of Kentucky's LTS. To address the requirement for continuing consultation procedures with the FLMs under 40 CFR 51.308(i)(4), KYDAQ made a commitment in the SIP to ongoing consultation with the FLMs on regional haze issues throughout implementation of its plan, including annual discussions. KYDAQ also affirms in the SIP that FLM consultation is required for those sources subject to the Commonwealth's NSR regulations.

#### **G. Periodic SIP revisions and Five-year Progress Reports**

As also summarized in section V.D of this action, consistent with 40 CFR 51.308(g), KYDAQ affirmed its commitment to submitting a progress report in the form of a SIP revision to EPA every five years following this initial submittal of the Kentucky regional haze SIP. The report will evaluate the progress made towards the RPGs for the mandatory Class I area located

within Kentucky and in each mandatory Class I area located outside Kentucky which may be affected by emissions from within Kentucky. Kentucky also offered recommendations for several technical improvements that, as funding allows, can support the Commonwealth's next LTS. These recommendations are discussed in detail in the Kentucky submittal in Appendix K.

If another state's regional haze SIP identifies that Kentucky's SIP needs to be supplemented or modified, and if, after appropriate consultation Kentucky agrees, today's action may be revisited, or additional information and/or changes will be addressed in the five-year progress report SIP revision.

## **VI. What Action is EPA Taking?**

EPA is proposing a limited approval and a limited disapproval of revisions to the Kentucky SIP submitted by the Commonwealth of Kentucky on June 25, 2008, and May 28, 2010, as meeting some of the applicable regional haze requirements as set forth in sections 169A and 169B of the CAA and in 40 CFR 51.300-308, as described previously in this action.

## **VII. Statutory and Executive Order Reviews**

### **A. Executive Order 12866, Regulatory Planning and Review**

The Office of Management and Budget (OMB) has exempted this regulatory action from Executive Order 12866, entitled "Regulatory Planning and Review."

### **B. Paperwork Reduction Act**

Under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq., OMB must approve all "collections of information" by EPA. The Act defines "collection of information" as a requirement for answers to \* \* \* identical reporting or recordkeeping requirements imposed on



ten or more persons \* \* \*. 44 U.S.C. 3502(3)(A). The Paperwork Reduction Act does not apply to this action.

### **C. Regulatory Flexibility Act (RFA)**

The RFA generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions.

This rule will not have a significant impact on a substantial number of small entities because SIP approvals under section 110 and subchapter I, part D of the CAA do not create any new requirements but simply approve requirements that the State is already imposing.

Therefore, because the Federal SIP approval does not create any new requirements, I certify that this action will not have a significant economic impact on a substantial number of small entities.

Moreover, due to the nature of the Federal-state relationship under the CAA, preparation of a flexibility analysis would constitute Federal inquiry into the economic reasonableness of state action. The CAA forbids EPA to base its actions concerning SIPs on such grounds. *Union Electric Co., v. EPA*, 427 U.S. 246, 255-66 (1976); 42 U.S.C. 7410(a)(2).

### **D. Unfunded Mandates Reform Act**

Under sections 202 of the Unfunded Mandates Reform Act of 1995 (“Unfunded Mandates Act”), signed into law on March 22, 1995, EPA must prepare a budgetary impact statement to accompany any proposed or final rule that includes a Federal mandate that may result in estimated costs to State, local, or tribal governments in the aggregate, or to the private sector, of \$100 million or more. Under section 205, EPA must select the most cost-effective and

least burdensome alternative that achieves the objectives of the rule and is consistent with statutory requirements. Section 203 requires EPA to establish a plan for informing and advising any small governments that may be significantly or uniquely impacted by the rule.

EPA has determined that today's proposal does not include a Federal mandate that may result in estimated costs of \$100 million or more to either state, local, or tribal governments in the aggregate, or to the private sector. This Federal action proposes to approve pre-existing requirements under State or local law, and imposes no new requirements. Accordingly, no additional costs to State, local, or tribal governments, or to the private sector, result from this action.

#### **E. Executive Order 13132, Federalism**

*Federalism* (64 FR 43255, August 10, 1999) revokes and replaces Executive Orders 12612 (Federalism) and 12875 (Enhancing the Intergovernmental Partnership). Executive Order 13132 requires EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications.” “Policies that have Federalism implications” is defined in the Executive Order to include regulations that have “substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.” Under Executive Order 13132, EPA may not issue a regulation that has Federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or EPA consults with state and local officials early in the process of developing the proposed regulation. EPA also may not

issue a regulation that has Federalism implications and that preempts state law unless the Agency consults with state and local officials early in the process of developing the proposed regulation.

This rule will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132, because it merely approves a state rule implementing a Federal standard, and does not alter the relationship or the distribution of power and responsibilities established in the CAA. Thus, the requirements of section 6 of the Executive Order do not apply to this rule.

**F. Executive Order 13175, Coordination with Indian Tribal Governments**

Executive Order 13175, entitled “Consultation and Coordination with Indian Tribal Governments” (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure “meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.” This proposed rule does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments. Thus, Executive Order 13175 does not apply to this rule. EPA specifically solicits additional comment on this proposed rule from tribal officials.

**G. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks**

*Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997), applies to any rule that: (1) is determined to be “economically significant” as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of

the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This rule is not subject to Executive Order 13045 because it does not involve decisions intended to mitigate environmental health or safety risks.

**H. Executive Order 13211, Actions that Significantly Affect Energy Supply, Distribution, or Use**

This rule is not subject to Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use” (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

**I. National Technology Transfer and Advancement Act (NTTAA)**

Section 12 of the NTTAA of 1995 requires Federal agencies to evaluate existing technical standards when developing a new regulation. To comply with NTTAA, EPA must consider and use “voluntary consensus standards” (VCS) if available and applicable when developing programs and policies unless doing so would be inconsistent with applicable law or otherwise impractical.

EPA believes that VCS are inapplicable to this action. Today’s action does not require the public to perform activities conducive to the use of VCS.

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

**AUTHORITY:** 42 U.S.C. 7401 *et seq.*

Dated: December 8, 2011

A. Stanley Meiburg,  
Acting Regional Administrator,  
Region 4.